

New Weapon Snuffs
Hot Box Fires

August 19, 1957

RAILWAY AGE *weekly*



↑ New coatings and techniques

combat **RUST**

Good Protection Can Save \$400 Million



This machine for excavating intertrack ballast is only one of the many different types of track maintenance equipment lubricated with ESSO MULTI-PURPOSE GREASE H.

One grease for many uses— **ESSO MULTI-PURPOSE GREASE H simplifies maintenance**

For all types of maintenance-of-way equipment
... ESSO MULTI-PURPOSE GREASE H. It is an ideal lubricant for such diverse equipment as ballast cleaners, tampers, cribbers, screeners and many other pieces of machinery, including automotive

and construction equipment. The use of one grease instead of many is more efficient, more economical. Because of these benefits, more and more railroads have come to use and depend on ESSO MULTI-PURPOSE GREASE H.

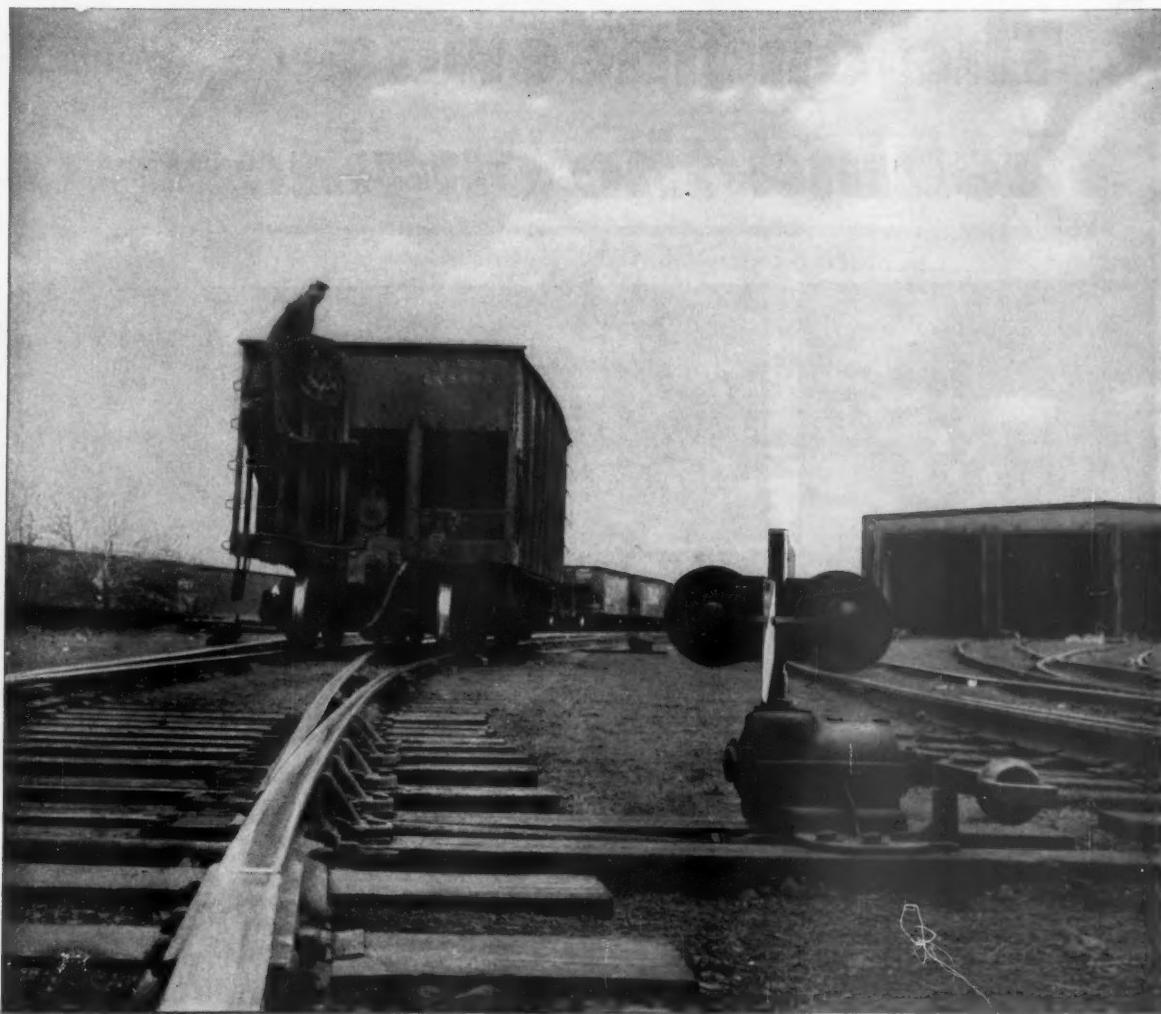
THREE IMPORTANT ADVANTAGES back the use of ESSO MULTI-PURPOSE GREASE H:

1. Outstanding in quality, it has been proved on the road and in the lab in a multitude of applications. Meeting the rigid requirements for automotive wheel bearings, it performs equally well in applications requiring a general purpose grease.
2. ONE grease performs in many applications, eliminating the need for a large variety of greases. It prevents application of the wrong grease and possible damage to machinery.
3. Storage and handling problems are reduced to a minimum, resulting in greater economy. It is easier to protect a single container of ESSO MULTI-PURPOSE GREASE H against contamination than several partially empty special-purpose drums.



RAILROAD PRODUCTS

Valuable years of experience in research and development, along with continual testing on the road and in the lab, stand back of the outstanding performance of famous Esso Railroad Products.



Model 22 Automatic Switch Stands keep things rolling at Port Richmond

This throat in the Reading's Port Richmond, Philadelphia, yard hums with activity when they're loading a ship or barge with coal. Cars roll smoothly down the ladder track and on to the "barney" which pushes them up to the dumper, with no time out to throw switch-stand levers this way or that.

This is a made-to-order task for Bethlehem's Model 22 Automatic stand, and here you see one of the many that keep things rolling at Port Richmond. This compact little stand was expressly designed for run-through service, and what a job it does!

After the car-wheels have kicked the switch points toward the new position, Model 22's powerful spring mechanism completes the movement and holds the points in the new position. While the target has turned to show the new indication, the throwing

lever stays right as it was before the run-through.

Facing-point operations can be handled by throwing the lever, just as with any other stand. This interchangeable feature makes the Model 22 railroading's most versatile switch stand. There's no maintenance problem, either, except for an occasional oiling.

If run-through movements figure in your road's operations, Bethlehem's Model 22 can speed things up, and probably save money too. A Bethlehem engineer will gladly furnish additional information and arrange a demonstration for you. He can be reached through our nearest sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
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BETHLEHEM STEEL



The engineering behind the engineer

TWO TRAINS MAKE A SIMPLE MEET—at least it looks simple. But the man controlling the signals and switches may be hundreds of miles away. He's not only directing this meet, but is also controlling traffic over the entire railroad.

The modern UNION C.T.C. system that makes this possible is a masterpiece of precision engineering. It represents many years of the combined efforts of UNION's research and development engineers, application engineers and traffic control engineers. These men are recognized leaders in their field.

When you install equipment bearing the US&S trademark, you are certain of—

Quality First...TO LAST

UNION SWITCH & SIGNAL

DIVISION OF WESTINGHOUSE AIR BRAKE COMPANY

Swissvale, Pennsylvania

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New accounting techniques help all operations p. 9

Concensus of several top accounting and finance officers is that centralization, where it's coupled with the tools of modern technology, pays off in better railroading.

Southern to take some rate increases p. 10

President DeButts says his road won't boost its prices where it's going to drive business off the road. But many items will not be "flagged out".

Roddewig, Mathews fill top AWR, C&EI posts p. 13

Former succeeds Daniel P. Loomis who has moved on to the AAR. New C&EI chief has been general counsel, a job Mr. Roddewig also held.

To combat rust—Protection can save \$400 million p. 18

There seems no more fertile ground than in corrosion control to cut maintenance costs. Here's what is being done on many fronts in this multi-phased campaign.

What paint-makers' research does for you p. 25

For almost every use under most conditions there's a suitable coating of some sort. That's the result of wide-ranging studies and new discoveries in the paint industry.

For protecting freight cars—paint or mastic? p. 33

Bright, bold colors that give a road identity—or more utilitarian coatings designed to last and last? There are sound arguments on both sides.

New weapon snuffs out hot box fire p. 34

A lightweight can filled with a dry chemical has been tested by the Illinois Central and found to do the job.

The Action Page—Stop the rust; it's money saved p. 58

It's a calamity for railroads to pay a \$400 million bill every year when anti-corrosion prescriptions are available. Rust-preventive investment is a modest outlay considering its use.

Short and Significant

Those Hudson River commuter ferries . . .

for the New York Central, Susquehanna and Erie were still afloat last week but spinning haplessly in an eddying tide of conflicting legal moves. Okayed by the ICC for discontinuance, they were kept running on the orders of New Jersey authorities.

JUDGE IT by the company it keeps

NASHVILLE, CHATTANOOGA & ST. LOUIS • ILLINOIS CENTRAL • CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC • ELGIN,
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The list of JACKSON TRACK MAINTAINER users reads like a large portion of "Who's Who in Railroads". And the reason for it is this: WHENEVER EXPERIENCED TRACK MEN INVESTIGATE, THEY FIND CONCLUSIVE EVIDENCE THAT THE JACKSON TRACK MAINTAINER PUTS UP PERFECT TRACK IN A WIDER RANGE OF BALLAST AND CONDITIONS THAN ANY OTHER TAMPING EQUIPMENT. Let us furnish you with the complete facts or tell you where you can see these machines in action. How about picking up that phone, right now?

JACKSON VIBRATORS, INC., LUDINGTON, MICHIGAN

Week at a Glance CONT.

Current Statistics

Operating revenues, six months	
1957	\$5,233,825,887
1956	5,236,344,953
Operating expenses, six months	
1957	\$4,110,382,398
1956	4,037,305,569
Taxes, six months	
1957	\$541,759,233
1956	558,823,136
Net railway operating income, six months	
1957	\$450,303,531
1956	511,593,738
Net income estimated, six months	
1957	\$345,000,000
1956	404,000,000
Average price 20 railroad stocks	
August 13, 1957	90.19
August 14, 1956	102.39
Carloading revenue freight	
Thirty-one weeks, 1957	21,289,312
Thirty-one weeks, 1956	21,985,916
Average daily freight car surplus	
Wk. ended Aug. 10, 1957	11,602
Wk. ended Aug. 11, 1956	16,170
Average daily freight car shortage	
Wk. ended Aug. 10, 1957	3,273
Wk. ended Aug. 11, 1956	6,115
Freight cars on order	
July 1, 1957	91,810
July 1, 1956	129,409
Freight cars delivered	
Six months, 1957	51,411
Six months, 1956	33,189

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'Pattern' suits Train Dispatchers . . .

They have agreed to a three-year wage contract based on the settlement established with other brotherhoods during 1956-1957 negotiations. It's a package wage boost of 26½-cents for ATDA's 3,300 members.

National Defense Transportation Award . . .

will go this year to Donald J. Russell, president of the Southern Pacific. It will be presented in Washington, November 21, at the annual dinner of the National Defense Transportation Association, which makes the award annually to the person making "the most outstanding contribution in the preceding year to the solution of emergency transportation problems affecting national defense." The announcement cited several "typical" Russell contributions to military and civil transportation.

"The nice things they say about us . . .

greatly over-balance the bad" Long Island President Goodfellow said of the road's commuting public in a "birthday" message to LIRR employees. He was celebrating the third anniversary of the Long Island's renascence (from bankruptcy) on August 12, 1954. If the next quarter is as good as the first, he said, "we're going to have a mighty good railroad."

Turbine in Chicago . . .

Union Pacific may display the first of its 30 new gas turbine-electric units in Chicago this fall. General Electric is building the 8,500-hp units at Erie, Pa. (Railway Age, Feb. 25, 1957).

Rio Grande buys television . . .

equipment including a camera and remote control monitor to enable the west yardmaster at Roper yard (Denver) to view part of the yard now blocked by a diesel shop. After testing here to ascertain its capabilities, the TV will be tested in other Rio Grande yards.

Latest trucker merger . . .

involves purchase of T. S. C. Motor Freight Line of Houston, Tex., by the Ryder System, parent of the Great Southern Trucking Company, a leading southeastern common carrier. The purchase adds 3,000 miles of highway routes to the Ryder network and about 500 trucks and a like number of employees.

Here's a switch: Grade crossing replaces bridge . . .

Illinois Commerce Commission authorized establishment of a grade crossing in place of an existing overhead bridge carrying State Aid Route 12-A over GM&O tracks near Alton, Ill. Reasoning: Aged bridge plus light highway traffic plus light rail traffic (GM&O cutoff line) plus automatic crossing protection made grade crossing practical, economical solution.

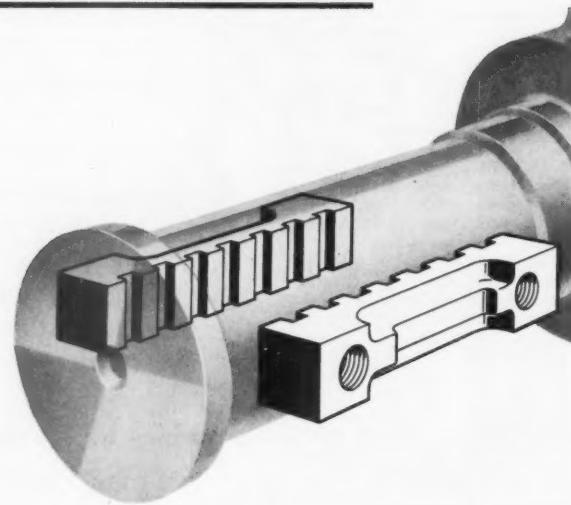
R-S JOURNAL STOPS

average better than 6,000,000 car miles per setout...

a FAR BETTER RECORD than

with any other journal box device!

Stabilization of bearing assembly provides a low-cost means of getting better bearing performance, FAST



MORE than 3,000 freight cars are now equipped with Magnus Journal Stops. These cars have chalked up more than 32,000 car months of service — with only 6 bearing failures. That's an average of better than SIX MILLION CAR-MILES per setout. And it's a performance record that you can't beat with any other type of freight car bearing, regardless of price!

Journal Stops make this kind of performance possible because they eliminate the major cause of bearing trouble — excessive

fore-and-aft movement of the journal within the box. Bolted to the box on either side of the journal, they prevent axle displacement even under the most severe switching and braking impacts. Bearing, wedge and lubricator stay *in place* all the time — assuring an uninterrupted oil film, greatly prolonged bearing life and reduced wheel flange wear.

For complete information on R-S Journal Stops, write to Magnus Metal Corporation, 111 Broadway, New York 6; or 80 E. Jackson Blvd., Chicago 4.

MAGNUS
Solid Bearings

MAGNUS METAL CORPORATION Subsidiary of **NATIONAL LEAD COMPANY**



WITH CENTRALIZED, MODERNIZED ACCOUNTING . . .

New Techniques Aid All Operations

The drift toward more and more centralized accounting activities—accelerated in postwar years by the swift current of technology—is all to the good for overall railroad operations. That's the impression you get from comments on the subject by several leading railroad accounting and finance officers.

"The modern concept of railroad accounting and statistics," according to Illinois Central Vice-President and Comptroller Frank E. Martin, "envision not only the customary functioning of routine bookkeeping, but in addition includes fact finding and interpretation in a uniform and realistic manner as an aid to management."

Centralization, Mr. Martin holds, has enhanced his department's value in providing control figures to the division superintendent despite elimination of the close working relationship the superintendent formerly enjoyed with the division accountant. Modern reproduction methods and the newer types of business machines tied in with superior communications, Mr. Martin contends, give the division superintendent the information he needs. As a dividend, he continues, centralization has brought uniformity to accounting procedures.

Analyzing the developments in railroad accounting in recent years, the vice-president of one progressive road commented that the division superintendent of the days when the division accountant was a standard position "has become almost a dodo bird."

"The technologies and environment of today," he asserted, "make the type of control formerly exercised by a division superintendent archaic."

"**Functional specialists**" have been bred in railroad accounting departments in the trend for specialized accounting services he went on, and they are able "to review the operations of an entire system and to direct significant information to the points where action can be most effectively taken."

P. J. Kendall, vice-president and general auditor, Southern Pacific, reports that centralization has not reduced the control figures furnished division superintendents and staff. Each SP division's expenditures are accounted for separately, he notes.

"We do not hesitate in saying that our accounting processes will continue to be

greatly improved by furthering the use of present electronic machines and by use of new machines as they become available. This will result in providing superintendents as well as management generally with more valuable information than they receive today and [did] at an earlier date."

The Canadian Pacific, which abolished the division accounting offices back in 1933, feels that it is "implicit" in its broadening use of modern accounting machines and communications facilities that "the new procedures will provide improvements in the quantum, nature and presentation of information useful for managerial decisions at all levels."

Centralization in railroading is not unique to accounting, Rock Island General Auditor H. H. Siddall points out: "operational functions have also been consolidated and authority centralized under various major departments. Top management today is in closer touch with the detailed operation of the system as a whole than it was 25 years ago and it looks to

the accounting department to furnish system statistics quicker and in more detail than it was possible to get under the division accounting plan."

He admits that the division superintendent can't get some of the information he used to as quickly as he might like but, Mr. Siddall goes on, the "benefits accruing" to top management from automated, centralized accounting activities, "outweigh what might be lost to the division staff."

Further progress in mechanization of accounting, Mr. Siddall holds, may outstrip procedures now considered modern.

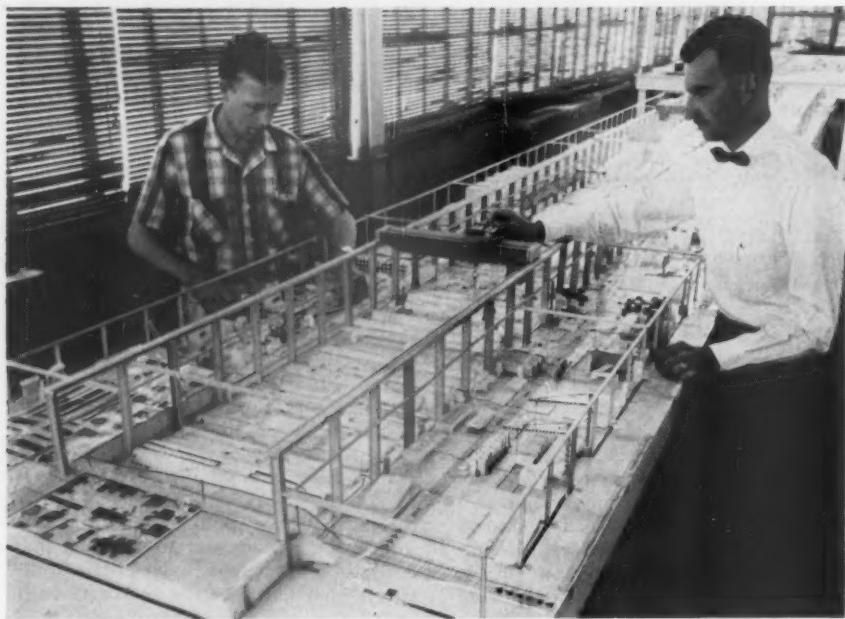
"Rather than furnish large volumes of comparative figures that take time to analyze," he thinks, "possibly it will be desirable to furnish only exceptions to the norm which is really what the operating official is primarily interested in. This can only be accomplished in a centralized headquarters . . . and operational control figures will eventually be furnished much more readily and in simpler form than



Miniature N&W Whistles Stop Show at Roanoke

Norfolk & Western President R. H. Smith (second from right) inspects miniature train display which proved a big attraction at trade fair during Roanoke Diamond Jubilee celebration. Mock-up is to be kept intact for use by road in future

promotions. With Mr. Smith are (left to right) L. E. Ward, N&W industrial and agricultural manager and vice-chairman of festival; J. J. Adams, N&W industrial agent and Jubilee co-director; and Shields Johnson, Jubilee president.



Alco Lays Out 'Progressive Station' Facilities

Scale model shows Alco Products' locomotive assembly building as it will be organized on rearrangement of manufacturing facilities at Schenectady. Modernization of general welding shop, sub-assembly and truck shop, and miscellaneous

machine shop is to be completed in December at \$1 million cost. Subsequent rehabilitation of other buildings will provide for flow of materials through "progressive station assembly lines" in fabrication process, company says.

under either the present or divisional accounting plan."

Another road reports that in its centralization "we have eliminated all accounting personnel from the traffic and operating departments so that this [accounting] department is the sole source for operational control purposes."

This and other roads have turned to so-called "responsibility accounting" in which a set of books is kept for ICC reporting

purposes while simultaneous reports are made charging to control areas only those expenses for which jurisdiction is held. Accounting information is speeded up while more accurate and thorough statistical reports are made possible, advocates maintain.

The Pennsylvania and the Great Northern are among those roads tending toward responsibility accounting. It is part of the PRR activity in the formation of methods

and procedures and centralized data processing departments. Comptroller H. J. Ward reports that it is the road's plan to be able to "pinpoint expenditures to particular areas . . . in order to control expenses and establish a base for budget forecasting."

J. A. Tauer, GN vice-president and comptroller, states that "it is our thinking that we will eventually be able to provide still better and more timely information with the use of electronic equipment such as the 'Univac.' It is hoped that eventually, through the medium of common language equipment" and the use of responsibility accounting that cost information can be provided for superintendents and other departments with a resultant "closer budgetary control."

From another major road comes the word that centralization has not impaired efficiency but has facilitated use of modern machines. Use of such equipment, it is held, will "enable us to provide information not previously available with respect to such questions as revenue freight movements, materials control and labor statistics. That is, it will provide the information required for improved control at the management level."

"A gradual return to decentralized locations for the preparation of source information" is the prediction of a mid-western road vice-president who stresses the value of the close contact that formerly existed between division accountant and division superintendent.

Such contact, he contends, resulted "in the superintendent being better acquainted with the cost of the operations under his control."

This officer, however, does not minimize the value of modern accounting tools but says that these will permit eventually setting up localized source points which will speedily transmit data to a centralized bureau for processing and distribution.

Southern to Take Some Rate Increases

'Flags out' on advances which might result in traffic losses—Other southern-territory roads follow suit — Corresponding rate hike expected in Canada

Last week's developments in the Ex Parte 206 case revealed that the Southern will take many of the freight-rate increases authorized by the Interstate Commerce Commission in its decision of August 6.

Along with other railroads in Southern territory, however, it advised the commission that the authorized increases (Railway Age, Aug. 12, p. 9) will be foregone in whole or in part on more than 40 commodities. The advice came in an application for relief from tariff-publishing rules which other southern-territory

roads are understood to have joined after the Southern's position became known.

The relief sought was granted by the commission. It gave the southern-territory roads five additional days to file tariffs making the increases effective August 26. They are thus authorized to file on 10-days' notice, instead of the 15 days provided in the commission's report. Tariffs of eastern and western roads were filed on the 15-day basis.

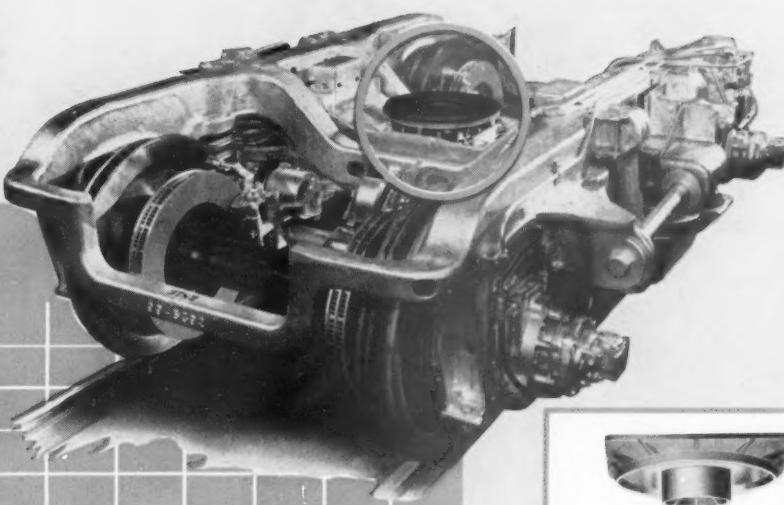
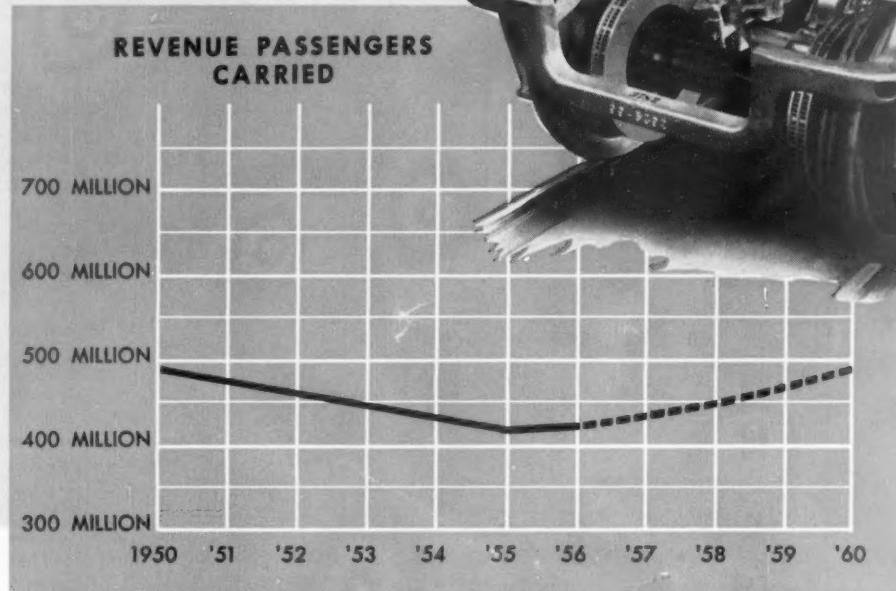
Omissions from the "flag-out" list indicated that the Southern (and thus other southern-territory roads) will take the

authorized increases in class rates on all commodities, and in all rates on important commodities not on the list—coal and coke, and livestock, for example. Also, some of the "flag-outs" have restricted applicability. For example, they apply to rates within the South on unmanufactured tobacco, lumber, fertilizer, rubber tires and tubes, canned goods, and cement; but not to interterritorial rates on those commodities.

In Canada it was reported that the Board of Transport would authorize Canadian railroads to increase rates to correspond with those authorized in the United States. If the authorization is granted, the reports hold, the traffic chiefly affected will be the \$260 million annual flow of commodities between the two countries.

(Continued on page 13)

Reverse the Trend in Your Passenger Revenue



Provide Greater Passenger Comfort with Commonwealth Central Bearings

Better riding of sleeping cars, diners and coaches means more comfort, attracts more passengers and increases your revenue.

Central Bearings which occupy the space formerly used by center plates provide a simple, positive way to assure smoother, more comfortable riding of existing cars, as well as new equipment. They eliminate lateral shimmy and side bear-

ing problems. In addition they increase mileage between wheel turnings, decrease maintenance expense.

*Available in a simple easy-to-install package—Central Bearings are readily applied to existing cars.

To attract more passengers—increase revenue and lower costs—use Commonwealth Central Bearings.



GENERAL STEEL CASTINGS

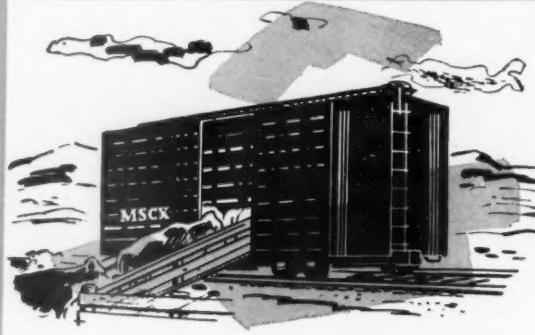
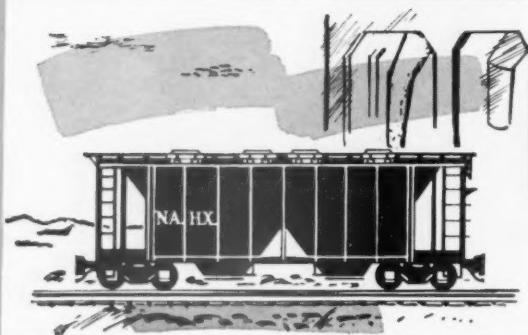
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 product?



It'll travel safe
 in a
**NORTH
 AMERICAN**
 car!



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The point is: There's a North American specialized freight car for practically any product you may name. What's more, North American applies 50 years of car leasing experience to your particular shipping problem. We welcome your inquiry.



**NORTH AMERICAN
 CAR CORPORATION**

NORTH WESTERN REFRIGERATOR LINE COMPANY
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A NATIONWIDE ORGANIZATION WITH BRANCH OFFICES IN IMPORTANT MARKET CENTERS

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(Continued from page 10)

The Southern's position was explained by the road's president, Harry A. DeButts, in a statement issued August 13. He said:

"Southern Railway does not intend to increase any freight rate where such action will price us out of the market and reduce our net income. Southern didn't ask for this increase, and not because we don't need the money. All railroads need more money, for the rate of return on investment has been discouragingly low in the railroad industry for years. But it is our opinion that higher freight rates simply mean a merry-go-round ride to nowhere for us in today's bitterly competitive transportation business."

"We are tired of seeing more and more freight, which by its very nature belongs on the rails, being carried, instead, by our subsidized competitors. And we are convinced that the principal reason is constantly advancing rail rates. This gives our subsidized competitors the chance to skim off the cream of our most desirable and profitable traffic—while they ignore traffic they don't want to carry. They happily allow us to have what's left, knowing we're obligated by law as a common carrier to take what's left. That hurts, because railroads are built to handle volume. It's our bread and butter. We want more business, not less."

"We believe we can get and hold the volume of business our modern railroad now is geared to handle by keeping our rates down, even lowering them when conditions justify. We know that it is through a large volume of traffic that Southern can best and most cheaply 'manufacture' transportation — saving money for our customers, and making some for ourselves. That's what we are determined to try."

"As to our position in this rate case, we feel that it has been a sound one, and in the public interest. Certainly it already has caused those interested in the well-being of the transportation industry to give serious thought to the dangerous effect of upward-spiraling freight rates."

Emergency Board Considering New York Harbor Dispute

An emergency board began hearings in New York last week on a wage dispute between New York railroads and their employees who are represented by Masters, Mates & Pilots. The employees involved are engaged in the railroads' New York harbor marine operations.

They are demanding a contract more favorable than the pattern established in railroad settlements with unions representing other employees. The railroads offered a "pattern" settlement.

Members of the emergency board, which was created by a Presidential order of August 6, are: Chairman James J. Healy, assistant professor of industrial relations at Harvard Business School; Walter R. Johnson, former attorney general of Nebraska; and Benjamin C. Roberts, Brooklyn attorney.

'Power Brake' Bill Progresses

Congress last week acted rapidly on proposed legislation to give the Interstate Commerce Commission authority to prescribe rules governing the inspection, testing and maintenance of railroad air brake equipment. The Senate passed its bill, S.1386, and the House Committee on Interstate and Foreign Commerce favorably

reported the companion bill, H.R.5124. The two differ essentially only in the time allowed the ICC to make their provisions effective.

In brief, the legislation would require the ICC to give official status to the appropriate rules adopted by the Association (Continued on page 47)



David O. Mathews



Clair M. Roddewig

Roddewig, Mathews Keep in Step . . .

Top AWR, C&EI Posts Filled

Two lawyers whose careers have followed strikingly similar paths continue in phase this month as each moves into a new railroad job. As one vacates the presidency of a railroad, the other moves into that post from the same office his predecessor once filled.

Clair M. Roddewig, president of the Chicago & Eastern Illinois since 1949, assumes the presidency of the Association of Western Railways September 7.

Elected to succeed him as C&EI chief is David O. Mathews, vice-president and general counsel of the road.

Mr. Roddewig takes over for Daniel P. Loomis who left the AWR to become president of the Association of American Railroads August 1.

Indications are that yet another appointment may be coming to fill out the AWR lineup—installation of an officer to handle the labor work which occupied a great part of Mr. Loomis' time.

After studying law at Creighton University, Mr. Roddewig practiced in Nebraska and South Dakota from 1926 to 1939 and served as attorney general of South Dakota, 1936-39.

Mr. Roddewig became attorney for the Interstate Commerce Commission at Minneapolis in 1939.

From 1942 to 1946 he worked with the Office of Defense Transportation in Washington, D.C., and was ODT general counsel when he left the agency to assume the position of C&EI general counsel. Mr. Roddewig was elected a vice-president of the railroad in 1948, moved up to the presidency the following year.

A C&EI spokesman said the outgoing president, a large stockholder in the company, will remain a member of its board of directors.

A graduate of the University of Nebraska, Mr. Mathews practiced law in Omaha, Neb., from 1925 to 1941, then went to Kansas City, Mo., as an attorney with the Interstate Commerce Commission. He served with the ODT in Washington from 1942 to 1944, when he was appointed special assistant to then-U.S. Attorney General Tom Clark.

Mr. Mathews joined the C&EI as general counsel in 1949. He was appointed a vice-president the following year and in 1954 was named to the board of directors.





* New KEM KOLD BILD being applied on new cars at Berwick, Pa., plant of A C F Industries, one of several leading car builders using this new one-coat spray material.

Now two-coat protection with one cold-sprayed coat... stencil in 2 to 3 hours!

Eliminate time for drying and application of second coat . . . save material and out-of-service costs! One full coat of new KEM KOLD BILD has the build of two standard coats using conventional spray equipment. It dries in 1½ hours and is ready for stenciling in 2 to 3 hours.

KEM KOLD BILD produces a dry-film thickness as heavy as 2½ mils. Good film flow with a minimum of overspray. And KEM KOLD BILD dries to a bright gloss that stands up under re-

peated cleanings and tough service. Doesn't lift or affect primers. No pinholing or bubbling from entrapped solvents during or after application.

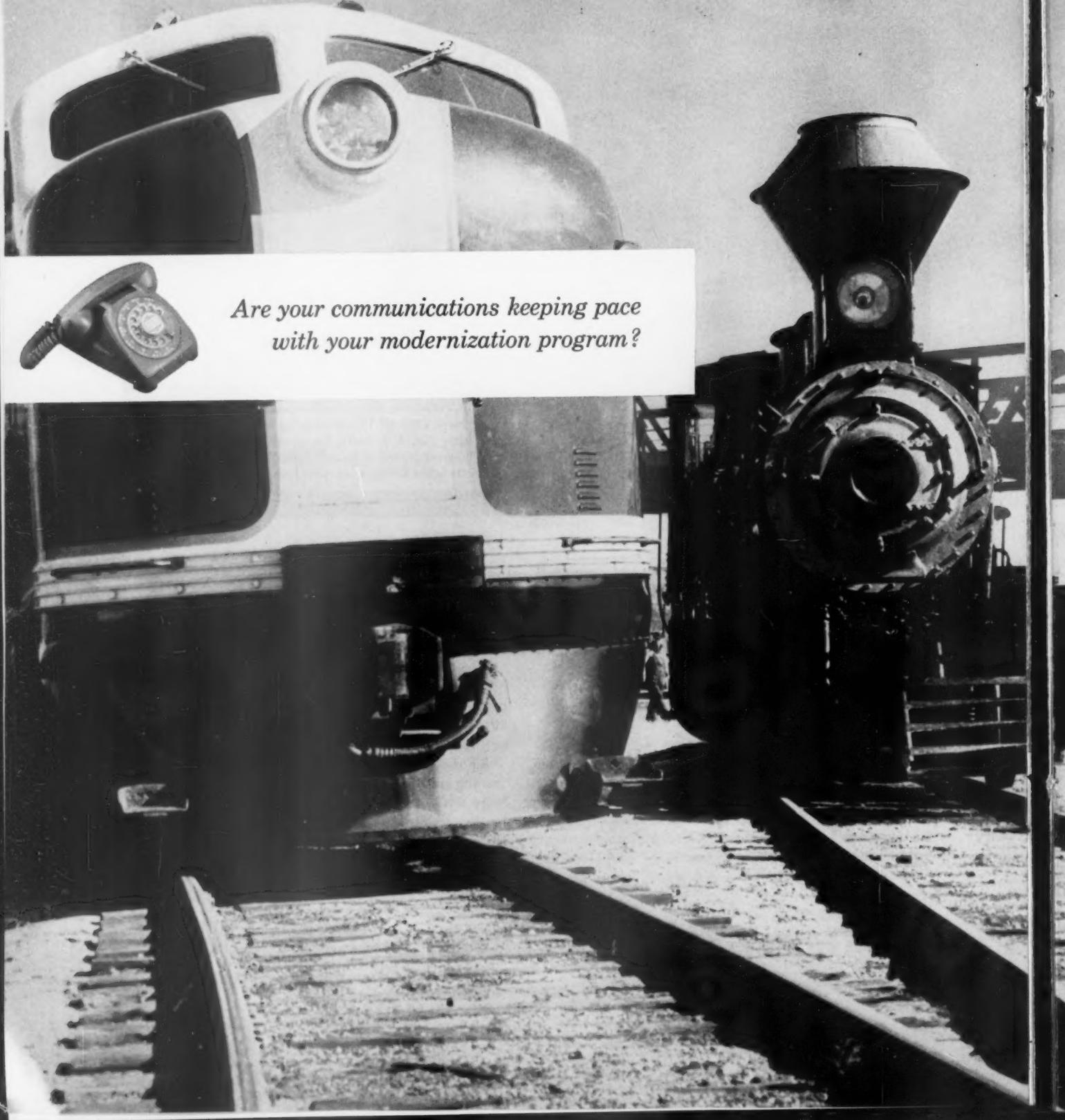
KEM KOLD BILD is being used by leading railroads and car builders now. Why not arrange for a demonstration by contacting The Sherwin-Williams Co., Transportation Sales Division, Cleveland 1, Ohio.

(In Canada: 2875 Centre Street, Montreal)



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Lenkurt Carrier equipment can give you the telephone circuits your people need—and usually without stringing an inch of wire. An Automatic Electric dial telephone system will handle all their calls at top speed. And the whole set-up can be *yours*; there'll be no rentals or toll charges.

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Eats into railroad revenues, but . . . Much of this loss can be averted by . . . Protective coatings or non-corrosive materials

HOW MUCH DOES CORROSION COST?

Corrosion damage has been estimated to cost the railroads of the U.S. as much as \$400 million in a single year—over \$300 million in damage to rolling stock and another \$90 to \$100 million in damage to structures.

As far back as 1950, F. K. Mitchell, then manager of equipment, New York Central, in commenting on this subject said "The further I proceed with this investigation the more astounded I become with the enormity of the figure. . . . Studies so far, although by no means complete, indicate that the ratio of corrosion damage to total repair costs, on selected types of rolling stock, is approximately as follows: Hopper cars 64%, gondolas 58%,

box cars 19%, flat cars 8%, coaches 25%, baggage cars, 40%, passenger and baggage cars 35% and mail and baggage cars 33%. Based on these figures the overall corrosion repair cost on freight cars was 33% and on passenger cars 29%."

Application of these percentages to the 1955 figures for freight and passenger car repairs indicates that the national railroad bill for corrosion damage repairs was about \$220 million for freight cars and \$60 million for passenger cars. Locomotives and structures account for another \$120 million. These figures point to the fact that there is no wider field than corrosion control for reduction in overall maintenance costs. This article is the result of investigations into the methods by which the railroads can hope to prevent some of these losses and make the money saved available for productive projects instead of letting it "go down the drain."

Corrosion losses can be substantially reduced by:

- Intelligent design of equipment with the definite objective of preventing corrosion damage for a great proportion of equipment service life.
- Using material having known corrosion resistant properties.
- Using quality surface protectives through which extended service life is traded for a slightly higher initial cost.
- Guaranteeing maximum service life of surface protection by the proper preparation of the surface to receive quality surface-protective materials.

Basically, there are two important considerations in any corrosion study. One is the environment in which the material is exposed and the second is the composition of the material itself. The warm, dry atmosphere in the middle of a desert is probably the most innocuous environment



What corrosion does

After a few years of service certain types of lading as well as the environment in which a car spends most of its life produce conditions like that seen above in the car side members. This means substantial expenditure for rebuilding, during which the car is not available for revenue service.

One could imagine from a corrosive viewpoint and any metallic structure would have an infinite life. But, unfortunately, railroad equipment does not spend all of its time in these areas.

Instead, cars and locomotives operate through rain and other forms of precipitation as well as in areas in which they are subjected either to sea breezes or industrial fumes. In addition to the normal atmospheric conditions, passenger equipment is given daily dosages of car-cleaning solutions and freight cars are often used to haul commodities which can accelerate corrosion.

HOW TO COMBAT CORROSION

Protective coatings may be considered a method to provide an insulating layer between the corrosive environment and the metallic structure. These coatings fall into two general classifications: namely, organic and metallic. The success of any organic coating depends upon proper surface preparation, selection of quality primer and top coats, and skillful application. It has been found that the relaxation of standards of either of these areas

will adversely affect the life of the system.

A protective coating should be judged on the basis of the most economical performance over a period of time and not solely on initial cost. Generally, the cost of the coating material itself is a very minor item when compared to the cost of application. It appears that the most economical coating is the one that provides the longest life between paintings.

Metallic coatings provide protection by either of two mechanisms. They may be less resistant to attack than the metal they are to protect and by their destruction prevent corrosion of the base metal. The coatings may also be more resistant to attack than the metal to be protected. By the deposition of a continuous nonporous layer, either by plating or spraying, the environment is kept away from the structure.

In railroad applications, such as passenger equipment and open-top freight cars, it has been proved that it is more economical to use more corrosion-resistant materials and minimize maintenance. Stainless-steel passenger equipment, for example, examined after 20 years of daily high-speed service, was found to be as sound as the day it was purchased.

Similarly, the high-strength low-alloy steel freight cars will last a minimum of 50% longer than a copper-bearing steel car of the same sheet thickness. Thus, in



What happens to stainless cars

After almost twenty years of daily service in an eastern seaboard atmosphere, the structural members in the side framing of a passenger car, which are of 18-8 stainless steel, appear to be in as good condition as the day they came out of the builder's shop—a tribute to modern materials.

Despite of slightly higher initial cost, cars built of corrosion-resistant steels will be more economical to operate.

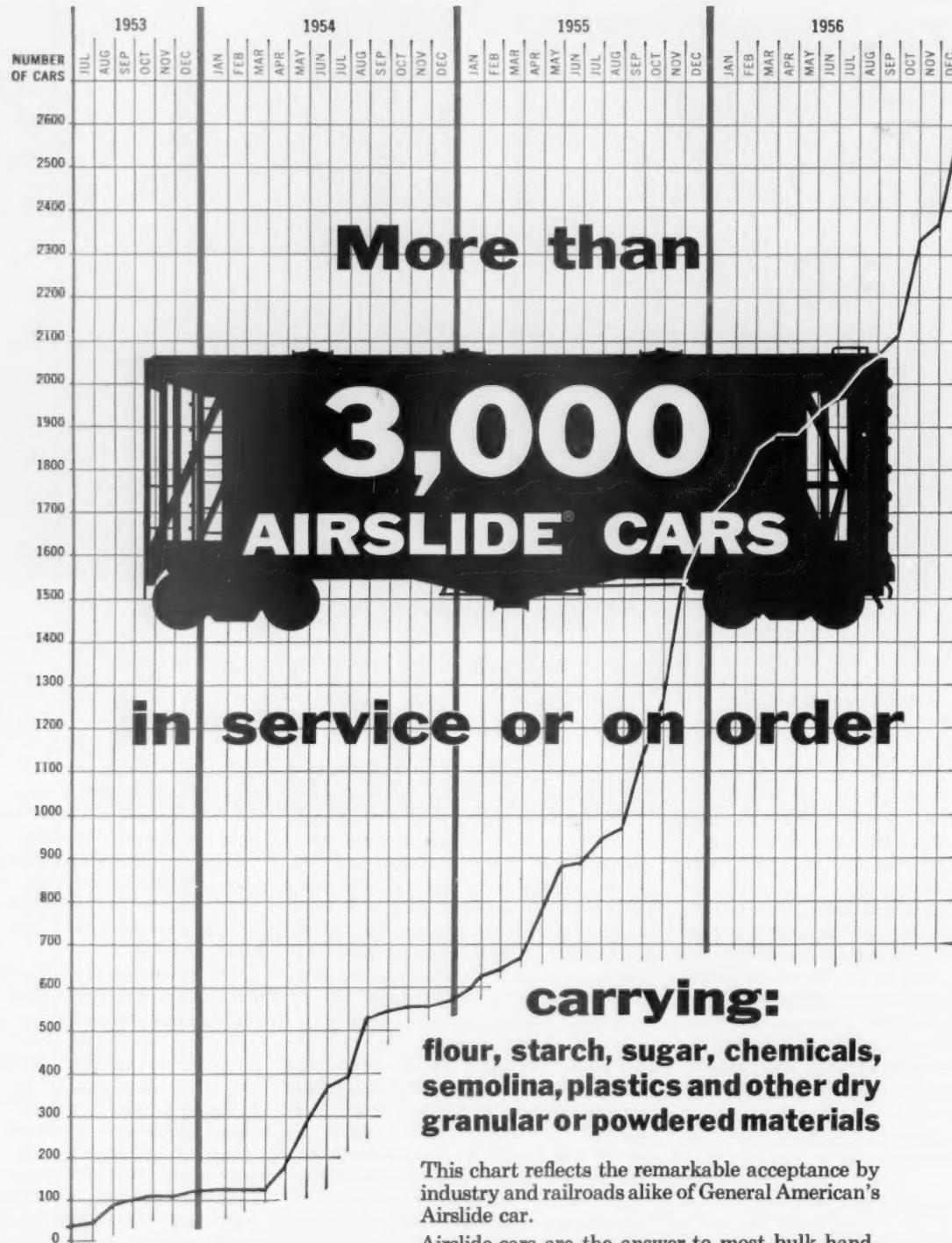
High-strength low-alloy steels have been used in freight-car structures for well over 20 years. Since its inception in 1933, over 235,000 cars have been built with U.S. Steel's Cor-Ten.

The resistance to corrosion of alloy steel such as Cor-Ten is rated four to six times that of carbon steel.

Some 4,500 freight cars built during the past five years use Bethlehem's "Mayar R" in all or part of their structures. In addition, there are other corrosion-resistant steels—such as Inland's "Hi-Steel"; "Republic 50"; Youngstown "Yoloy" and Allen-Wood Dynalloy—which have been used in car construction. All of the above-mentioned are nickel-chromium steels. Three of them are nickel-molybdenum.

The loss from atmospheric and other corrosion in the field of passenger cars is considerably less than in the freight-car field, and the railroads within the past few years have taken advantage of the value of corrosion-resistant steels in most of the new passenger-car design and construction.

Wrought iron has been the "old reliable" of the railroad industry since the early part of the 19th century. In addition to its ability to resist shock, vibration, and fatigue, wrought iron is also highly resistant to corrosion and plays an im-



This chart reflects the remarkable acceptance by industry and railroads alike of General American's Airslide car.

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portant role in solving railroad corrosion problems. Among the mechanical applications for which wrought iron is most commonly used are air-brake piping, steam lines, and diesel facility piping.

In the case of air-brake piping, corrosion is caused by moisture which condenses when the temperature of compressed air in the lines falls below the dew point. Wrought iron has the ability to form a dense and adherent oxide film which largely eliminates the possibility of plugging. Because of this characteristic, the Association of American Railroads has stipulated that extra-heavy wrought-iron piping and nipples be used on all passenger-car air-brake equipment. Many roads also use wrought-iron air-brake piping for freight as well as passenger cars.

Wrought iron is also used to fight corrosion in railroad applications—bridge decks, fire curtains, roof drains, pier protection plates, and tie spacers—to mention a few.

While the ferrous materials have played the largest part in the construction of rolling stock and structures, aluminum alloys have been used in numerous instances, in passenger car construction. In the field of freight cars the railroads are showing a growing interest in the weight and corrosion-resistant characteristics of aluminum.

PAINT PAYS

With present-day competition, mechanical departments are confronted with the simultaneous problems of providing better looking cars and locomotives while being given less time to make them look that way. Despite the current trend toward better appearance, the important thing is not how a car looks when it leaves the repair shop or carbuilder's plant, but how long the paint will last and protect the car after it is placed in daily operation.

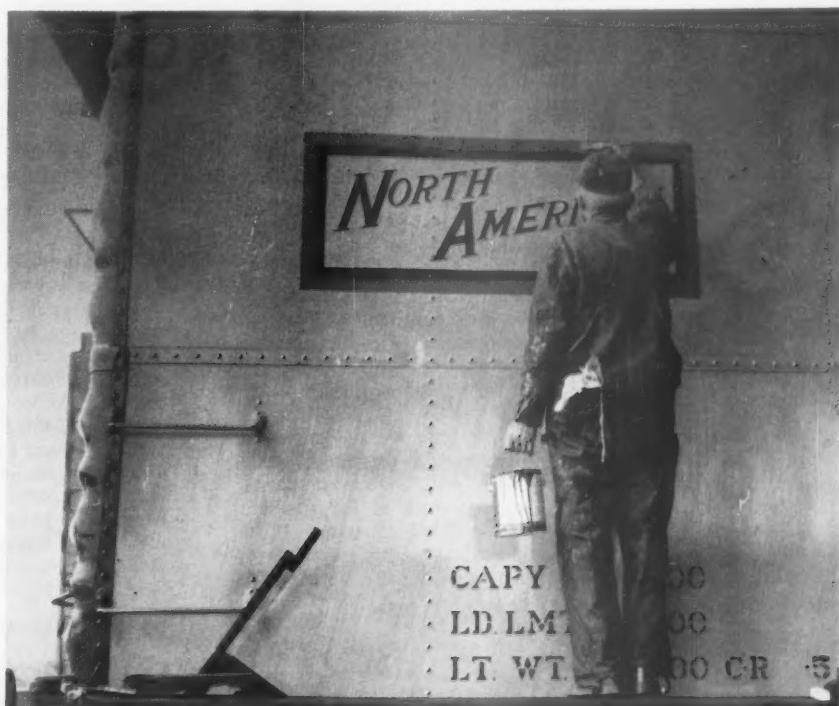
Paint suppliers are almost unanimous in stressing the vital role played in good surface finish by proper surface preparation. Removing mill scale, rust and old paint may be accomplished with shot blasting, sand blasting, flame cleaning, hand or power-tool cleaning, or with solvents. Railroads are using most of these methods and are sometimes using combinations of them to solve special situations.

Today's railroad paint field sums up something like this: Vinyl paints afford excellent, all around protection against corrosion and abrasion while offering resistance to chemicals and moisture. They must be applied to *very clean surfaces* with a multiple-coat application. Epoxy coatings are newer than the vinyls and duplicate their resistance. It is possible to



Wrought iron for piping

An upside-down view of a C&NW "Superbanite" commuter car. These cars, built by Pullman-Standard, seat 161 persons. Corrosion- and shock-resistant wrought-iron pipe, in sizes from $\frac{3}{4}$ -in. to $1\frac{1}{4}$ in., was specified for air-brake and auxiliary line.



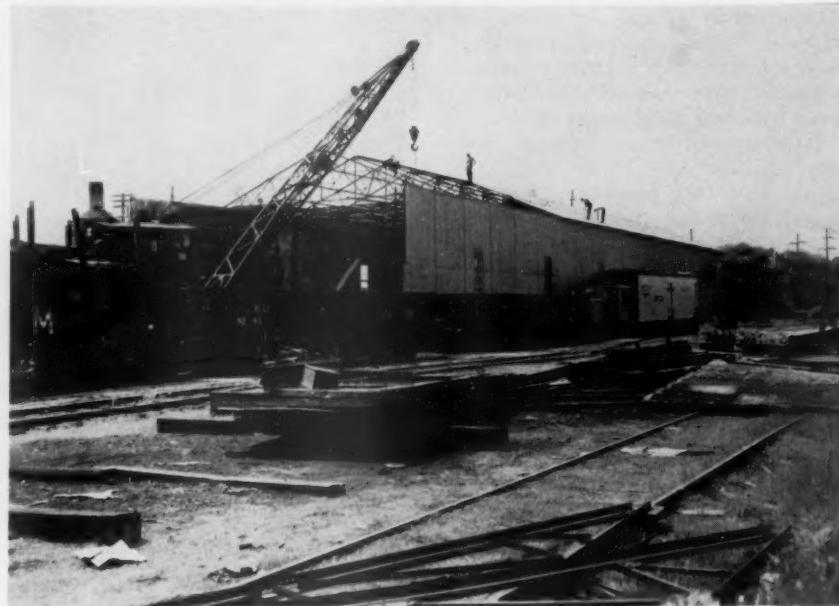
'Dolling' it up

Better looking cars are the order of the day in the freight car field. Modern finishes not only make possible the use of more attractive colors than formerly was the case but the characteristics of modern paints, applied to a carefully prepared surface, guarantee a much longer service life.

apply some epoxy coatings without primers.

Oleoresinous coatings are the two-coat, fast-drying, all-purpose freight car paints. Synthetic enamels can be formulated to produce one-coat or high-building qualities. The one-coat enamels which can be applied direct to metal without primer are undergoing widespread tests and have been adopted by some railroads. Rust-inhibiting pigments are incorporated in some one-coat, direct-to-metal paints. The standard primer coat, however, is designed specifically for the protection of the metal and to serve as a proper base for the finish coat.

Three new types of paint application are in use. Hot spray with special paint heaters and preferably with special paints will reduce overspray and will give a high-buildup per coat. Another new method, now widely used, is the steam spray method which requires a steam generator, superheater and special guns. Overspray problems are practically eliminated. Another method is the airless spray equipment in which the paint is heated and subjected to pressure which causes it to atomize when passed through special nozzles.



Moving day

The nature of paints, the facilities with which they are applied, are so different today from what they were a few years ago that new shops are being built. Here a 300-foot, 30-year-old shop is being torn down to be reconstructed at a new location.

Railroading



After Hours with *Jim Lyne*

COMBINES RR & COLLEGE—I have a letter from a young railroader—who is not yet in the "college graduate" class, but who is getting there. He works the second trick, so is able to attend regular college classes, not "night school." He wants to know how to get classified by management as "college material"—as he would happen automatically if he had approached railroading by application at the top, after he had completed his education.

This is a good question. The only suggestion I can offer is that he get his case to the attention of the top personnel people on his railroad (preferably, of course, with the cooperation of his immediate supervisors). There are ways of doing these things effectively, and at the same time not offending anybody. Finding out a right way to do it is a good test of a man's skill in dealing with people.

This particular railroader is, also, a little uneasy about the future of the railroads—fearing that, maybe, they might "end up like the buggy-whip business." My only answer to that is, if he will dig as deeply into the economics of the situation as a good student should, he will quit his worrying. If he does dig deeply, he will find out that there's nothing wrong with the railroads that hard work with the head by able people can't correct.

RAILROADS AND HISTORY—Riding along on the New Haven near Wakefield, R.I., the other day I saw again the sign somebody has placed about 100 yd from the track reading "Great Swamp Fight—1675." Most of that New England country is up to its ears in reminders of early American history—but this Rhode Island sign is the only thing near a railroad main-line that spotlights any of this history, as far as I've seen.

I don't think for a moment that it's up to a railroad to

advertise local history—but there certainly ought to be enough regional patriotism in almost any locality, which could be mobilized to point out to railroad patrons what the place's noteworthy past has been. Some states (e.g., Virginia) and even towns (Monterey, Cal., for example) do this job very well.

RAILROAD LINGUISTS—Speaking of railroaders who are skilled in foreign languages, Assistant Engineer Wilson Robertson of the Seaboard Air Line (valuation department) at Norfolk, Va., tells me he has had a strong interest in French and Spanish for many years—and that, while he has little opportunity for conversation, he keeps in practice by reading books and periodicals in both languages, including railroad literature and correspondence received in his company's office from countries where French and Spanish are spoken. Of the French he says:

"It has been my observation that they have some really hot ideas in railroading, and we could learn from them technically."

My observation coincides with Mr. Robertson's. Moreover, the French have a lot of good railroad literature—books and periodicals, and even railroad fiction. Mr. Robertson would be glad to correspond with railroad men in foreign countries whose language is French or Spanish.

NEEDS A DIESEL RIDE—When the late Casey Jones' colored fireman died a few weeks ago, the New York Times printed an editorial which called the Casey Jones song "not only a sort of requiem for a brave engineer, but for a vanished period in our history when romance rode the rails." My own railroad riding goes back almost to the Casey Jones days, and if railroading today is any less exciting than it was then, I haven't noticed the change. The romance is still there, but not as many newspaper people are looking for it around the railroads now as the old-timers did.

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Illinois Central uses STANDARD Lubricating Oils



Many of the new GP's going into service on the Illinois Central, as the Road progresses with its dieselization program, are lubricated with STANDARD Diesel Lubricating Oils, one of the oils approved for use in the Illinois Central's diesel fleet. This figures. Standard lubricated the I-C's steam power. STANDARD Lubricating Oils were used on the Road's first articulated diesel, the "Green Diamond."

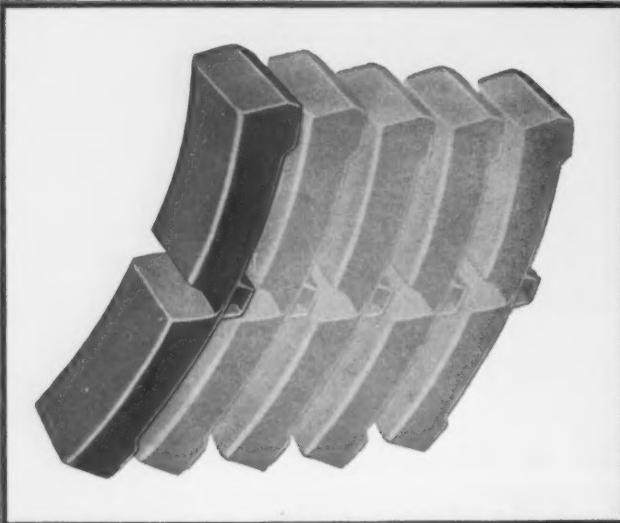
The first diesel power on the "City of Miami" was lubricated by Standard products. These and other power units on the I-C continue operating with excellent results. They deliver hundreds of thousands of miles of service without a bearing or other part failure due to faulty lubrication. Crankcases, cylinder walls and pistons remain clean.

Get more facts about the advantages of using STANDARD Lubricating Oils. Write or call Railway Sales Department, Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

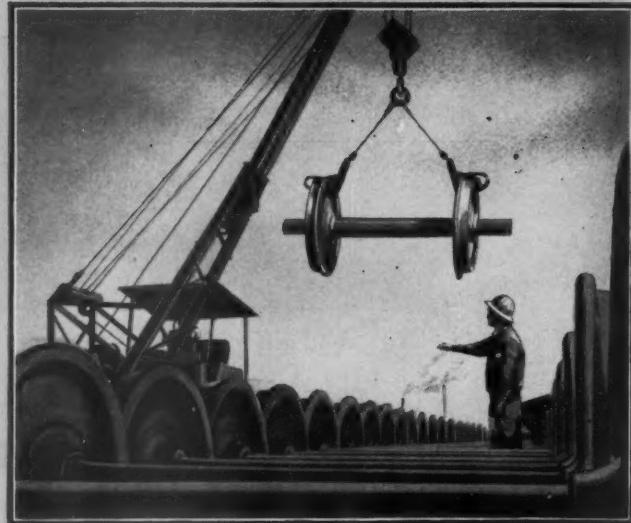


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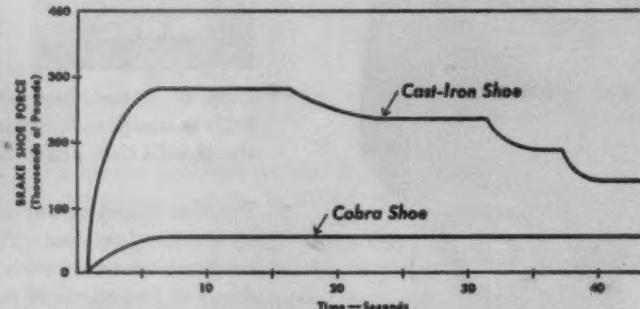


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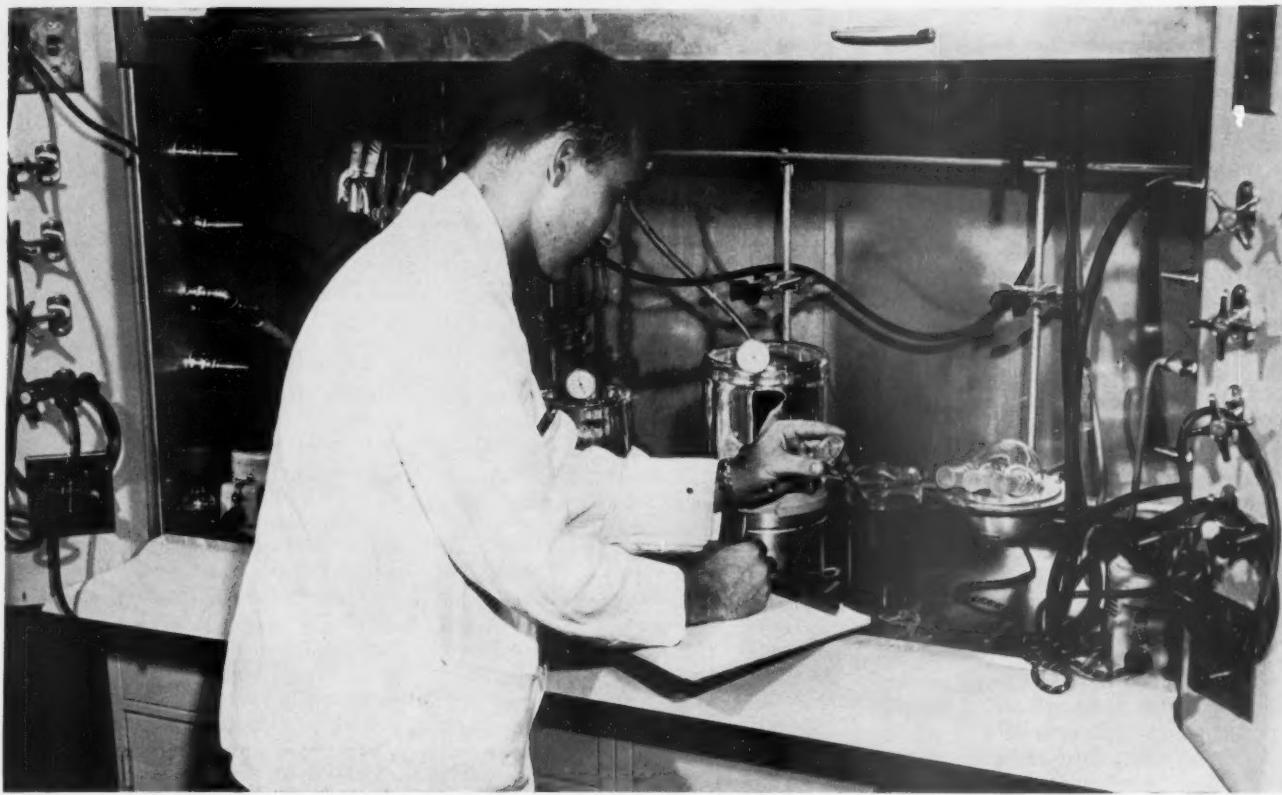
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RESEARCH requires a laboratory where the temperature and humidity can be maintained at a constant level. Here, a chemist

in the research laboratory of United Wallpaper, Inc., is taking temperature readings in an uninsulated container.

What Paint-Makers' Research Does for You

The paint industry has employed its know-how and research resources to develop many special protective coatings to meet the exacting requirements of the railroads. For example:

- An insulating coating for dual-fuel storage tanks on diesel units. With the use of the heavy-type diesel fuels, which tend to solidify at the lower temperatures, it was found that storage tanks, even though most are equipped with heat exchangers, still require insulation to maintain proper temperatures on cold-weather runs. An insulating coating was developed for this purpose which can be sprayed on the tanks to a thickness of $\frac{1}{4}$ to $\frac{1}{2}$ in.

- A low-gloss, non-reflecting black enamel was developed especially for the signal departments for both brush and spray application without streaking.

- Special paints, which resist fumes and lading spillage, were created for durable stenciling for cars.

- A heavy, semidrying, aluminum pigmented, waxy coating was recently made available for protecting bridges and other metal structures in corrosive environments.

- A number of paints have been developed particularly for exterior use on covered hopper cars where good adhesion, and abrasion, corrosion and alkali resistances are essential. Also, a number of coatings were developed specifically for the interiors of these cars where non-toxic, odorless, non-porous, hard glossy surfaces are desired.

Today the railroads have more good paints and surface coatings from which to select than ever before. You can obtain a suitable paint for almost every conceivable surface application and condition encountered in railroad service. This is a result of what the paint manufacturers have learned and are learning through research.

Some of the larger paint makers main-

tain their own research laboratories and technicians (one company has more than 600 technicians), while others may join forces (such as the 14 concerns making up the Paint Research Associates, Inc.), to support a research laboratory for their mutual benefit. A few rely upon outside commercial laboratories for working out special problems.

What Do They Do?

These technical staffs engage in basic research, applied research and product control. Basic research is the sphere where chemists develop new techniques, materials and processes.

Currently, two of the most intriguing fields for the basic-research chemists are the vinyl and epoxy resins. Hundreds of different possible combinations of molecules which would result in different kinds of resins are possible, each with its own

characteristics and potential value. It is the responsibility of the basic-research chemist to explore the structures of these combinations and evaluate them to provide a "bank" of ideas, techniques and materials which can be drawn upon later to create coatings meeting the needs of customers.

Chemists engaged in applied research translate the findings of basic research into the production of special coatings. They test the results of basic research and evaluate all new materials which might produce a specific finish or coating. They must be able to formulate a new coating, knowing just how it should perform, test it in the laboratory to verify their predictions, and put it to test under varying field conditions to be certain that there are no complications before marketing it.

They must also be prepared to demonstrate to a customer how a specific finish or coating will perform under varying conditions. This means that they must make themselves familiar with the properties of new products seemingly unrelated to the paint itself. For instance, a new detergent may be offered to the railroads for washing equipment. By knowing the properties of this detergent, the paint manufacturer can predict its effect on his product and take measures to adjust its formulation to withstand any deleterious effect.

Looking Ahead

Chemists engaged in product control take samples of each batch of paint mixed in the plant and subject them to various tests and analyses to assure that the batch conforms with specifications. If not, they take steps to make it conform.

Research is long-range and short-range. Railroads benefit through both.

Long-range projects may take years for developing a new product and for perfecting a technique to make it suitable for general use. For instance, the hot-spray application method, which gives a heavy paint film and uniformity of application, took years to develop. This process was first used in Europe for the application of lacquers, with the material heated just prior to being atomized and propelled to the surface by compressed air. Paint manufacturers in this country experimented with this method to obtain paints which could be sprayed on railroad box cars. One difficulty was to get a coating which would dry in two hours so the cars could be stenciled and put into service. Two years of testing were required before a product was created which was considered suitable for field testing.

Short-Range Research

Short-range developments deal with special paint applications a user is contemplating. The paint salesman submits the requirements to his technical-service department, which either comes up with the right product or presents it to applied research for solution.

Another way in which a new coating is developed is by interplant conferences, held at regular intervals by most paint companies. These conferences are attended by members of both the basic-research and applied-research staffs, representatives of the technical-services department and by group leaders from various other departments (such as railroad sales). Here, the current problems are discussed.

Suppose, for example, that basic research has created a new synthetic resin which has certain performance character-

istics. The technical services railroad expert may say that those characteristics will solve certain problems of the railroad industry. Out of this conference may come a new product which applied research then proceeds to develop.

How They Do It

To carry out research the technicians must have a laboratory where temperatures and the humidity can be maintained at certain levels so that each new coating may be directly compared as to properties and performance with previously created coatings. They must also have a large amount of apparatus and equipment for making the many tests required.

Hot-spray painting is best done indoors where the temperature and spray drift may be controlled and where the utilities are available for heating, for providing air, and for infrared drying. But there are many rip-track locations where car painting is necessary which do not have such facilities. For these conditions the paint manufacturers developed a line of paints which could be cold-sprayed. This process, together with the availability of suitable paints, provides a quick means of painting at almost any location.

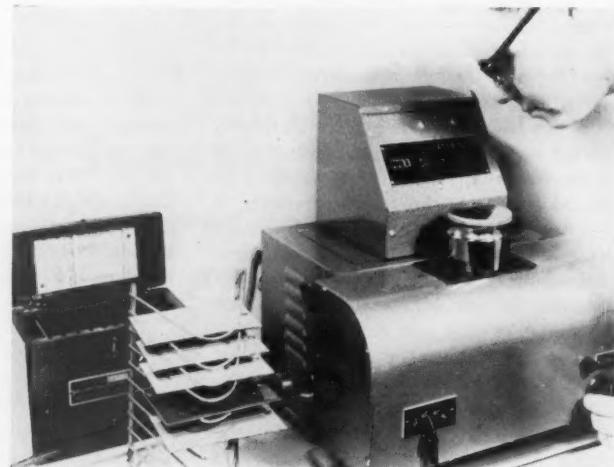
Another example of a long-range project is a line of paints for steam spraying. Application is essentially the same as hot-spraying, employing superheated steam instead of compressed air. Since the volume of steam collapses when it leaves the nozzle, the paint particles, it is claimed, do not bounce off the work to be lost in the air. This method is reported to save paint as well as labor.

All these spraying methods permit substantial cuts in the major paint-cost item—labor.

MORE ABOUT PAINT RESEARCH ON PAGE 28 ▶



WEATHEROMETER (left) and 20-per cent salt-spray cabinet in laboratory of Dearborn Chemical Company where coatings are given accelerated life-expectancy and corrosion-resistance tests.



GLOSSMETER is used to measure the amount of light reflected from a painted panel at several angles. This one, in duPont's laboratory, is that company's Type "J" glossmeter.



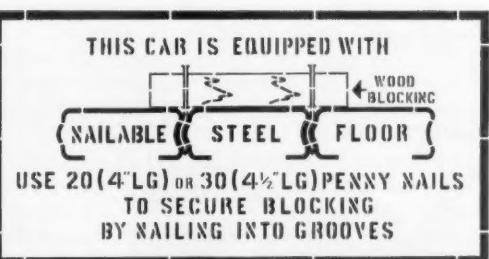
N-S-F® helps RAILROADS BUILD "PREVENTION PACKAGES" THE RIGHT WAY... FROM THE FLOOR UP!

"Prevention Package" . . . a freight car built with special features and maintained with special care to help put the brakes on the railroads' skyrocketing Cause F (defective or unfit equipment) loss and damage claims, now edging the \$5 million annual mark.

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The stencil that smart shippers look for in freight cars. It means better lading protection, and it can help reduce railroads' Cause F loss and damage claims.

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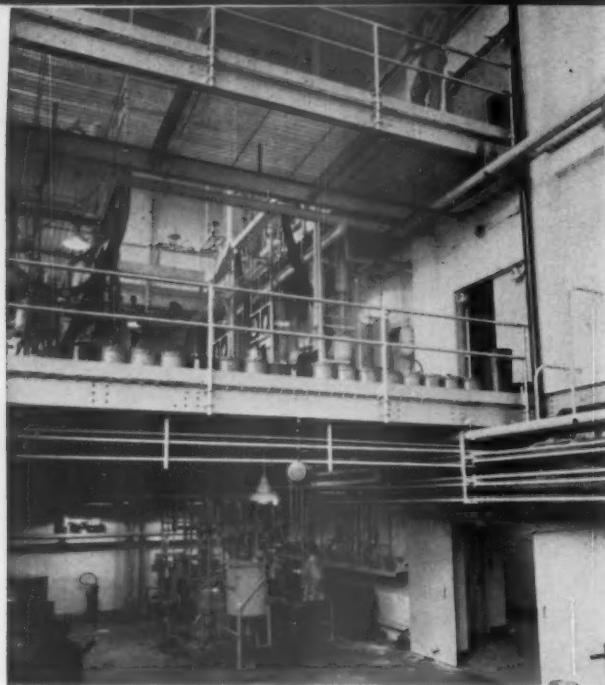
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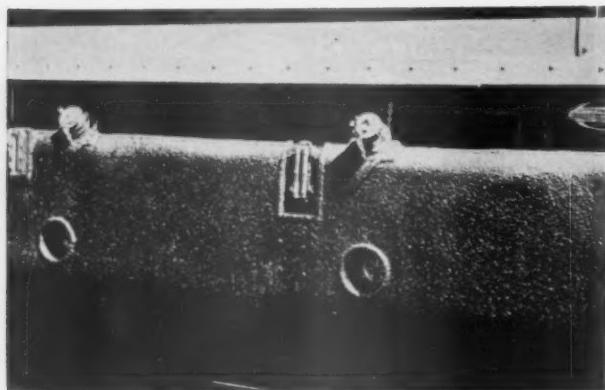
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PILOT PLANT of Pittsburgh Plate Glass Company in Springdale, Pa., produces new resin in sufficient quantities to permit field testing and evaluation.



INSULATING COATING was developed especially for use on diesel fuel-storage tanks on diesel locomotives for maintaining proper temperature of fuel during winter runs.



OUTDOOR weathering rack in Florida where the Pittsburgh Plate Glass Company has test panels exposed to constant salt-air breezes and the blazing tropic sun.

MORE ABOUT PAINT RESEARCH

What Railroads Demand From Paint Producers

Although railroad paint users expect the same benefits from paints—such as protection, durability, ease of application and good appearance—as anyone else, they also demand additional coating qualities which tax the ingenuity and knowledge of paint manufacturers. The reason is that railroads must have paints for both fixed and mobile properties, some of which are subjected to all extremes of weather and temperature and to conditions not encountered by other industries.

Rolling stock moves from midwinter cold to desert heat. It also encounters sand abrasion. So you want a paint to give good surface protection under this range of conditions and with a good gloss of a certain color. But you want to spray-paint and stencil cars quickly to hold down the time they are out of service. That means a quick-drying paint suitable for spraying.

Requirements of Reefers

If it's a refrigerator car you are to paint, you want a coating which will withstand the effects of condensation on the exterior due to ice and salt, as well as the effects of frequent washings required by the formation of scum. This means hard-surface, water-resisting enamels. For the inside you want a low-odor paint to minimize contamination of foods. In addition it must be water and heat resistant to withstand steam cleaning, and abrasion-resistant to withstand top icing.

Tank and hopper cars also present special paint problems owing to the wide variety of ladings carried. Petroleum products, wine, molasses and many chemicals are handled by tank cars, and cement, salt, sugar, ore and coal by hopper cars. Such ladings mean paints that are non-toxic and neutral to chemicals, as well as abrasion and corrosion resisting.

Passenger cars and diesel locomotives require coatings that are glossy in appearance and resistant to frequent washings. In addition, the colors must be long-lasting.

Paints for Structures

The requirements of fixed structures also prompt the railroad user to specify coatings for special conditions. Although stations and other railroad buildings will not necessarily require special paints, you may wish to specify a fire-resistant paint. For bridges you may wish paints that will not only resist atmospheric corrosion, but will also stand up well under salt-brine drippings.

Since roadway signs and switch targets are subjected to train-blown dirt you will want a paint for these purposes that will resist abrasion and withstand frequent washings.

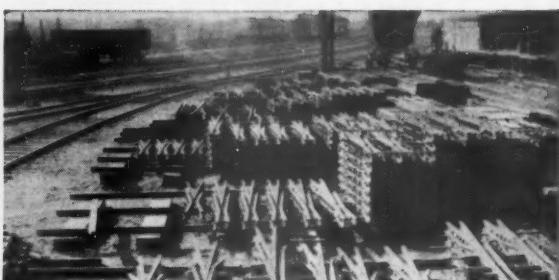
Then, you must have paints for fuel-oil tanks, for oil, water, fuel, air and steam-supply lines, and for high-temperature surfaces, such as smoke or exhaust stacks. To top it all, you know that your painters do not always properly ready surfaces to receive the paint. So you want—let's call it a wish—a foolproof coating, inexpensive in first cost, but adaptable to the special conditions of service. It must show durability even if it should be applied by careless workmen.



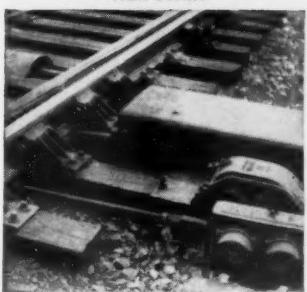
Rail Joints



Bridges



Stored Materials



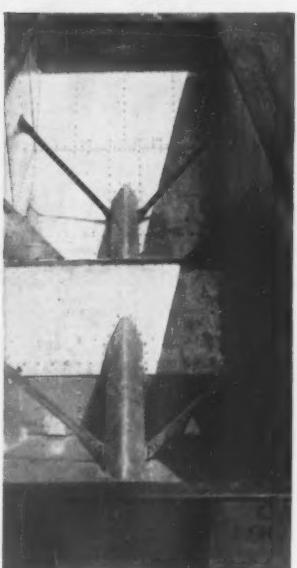
Signal Equipment



Car Journals



Pipe Protection



Car Construction



Viaducts



Steel Tanks



Street Crossings

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A Message to Management...

For longest car life at lowest annual cost

21 years service without major repairs proves the economic soundness of **USS COR-TEN Steel construction**

Take a look at this youthful "old-timer." It dramatically illustrates USS Cor-Ten Steel's ability to prolong car life and reduce maintenance costs.

Built by the Baltimore and Ohio in 1935, this 40-ton experimental covered-wagon-top box car weighs only 34,000 lb.—is one of the lightest cars of its type ever constructed. Its side and roof panels of $\frac{1}{2}$ " corrugated Cor-Ten Steel and ends of $\frac{1}{16}$ " Cor-Ten Steel are in general only one-third the thickness of conventional AAR design.

Yet these very light Cor-Ten Steel body sheets have been in use for 21 years and have required only moderate repairs. Recent inspection shows them still fit for several additional years of service before major repairs will be required.

When you consider that in the type of service encountered by B & O cars the life of box car sheets is about 20 years, with heavy repairs being required after about 10 years of service, the performance of Cor-Ten Steel in car Number 367100 can well be called "excellent service"—especially so in view of the fact that the Cor-Ten Steel sheets are up to *two-thirds lighter* than AAR standards.

Not in this car alone, but in the more than 225,000 freight cars that have been built with this superior high-strength low-alloy steel, Cor-Ten's ability to better resist atmospheric corrosion and mechanical damage has been amply demonstrated.

Although these cars are of various types—box cars, gondolas, hopper cars, refrigerator cars, etc.—and operate under widely different service conditions, records show that they consistently stand up better and require less maintenance than similar equipment built with less efficient steels. To obtain the same kind of service, specify USS Cor-Ten Steel for your next cars. Get the facts about USS Cor-Ten Steel. We'll be glad to show you how this tough, strong, corrosion-resisting steel will pay off for you.

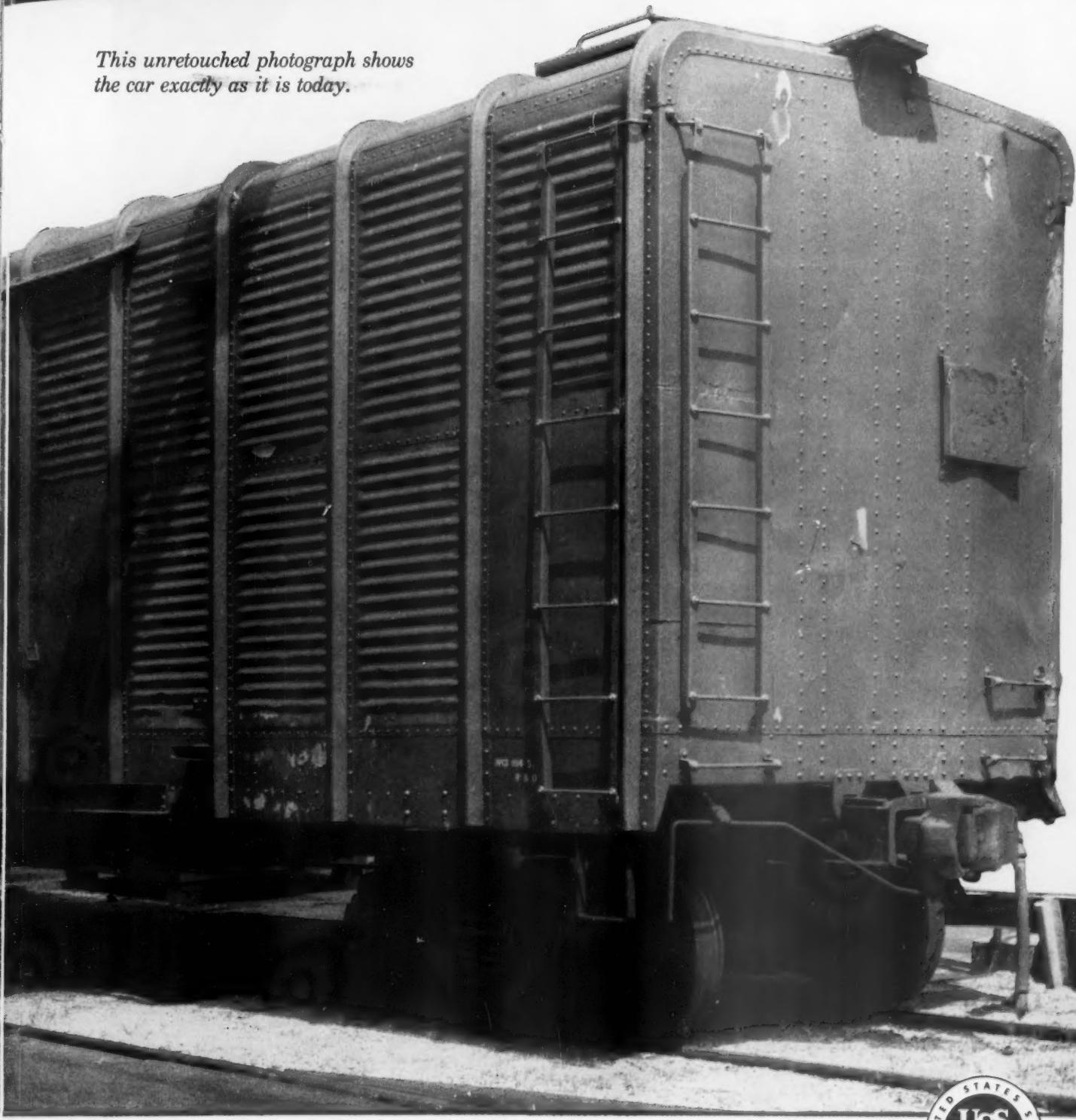


See "THE UNITED STATES STEEL HOUR" — Televised alternate weeks — Consult your newspaper for time and station.

UNITED STATES STEEL CORPORATION, PITTSBURGH - AMERICAN STEEL & WIRE DIVISION, CLEVELAND
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO - NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. - UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

specify construction with USS COR-TEN Steel

*This unretouched photograph shows
the car exactly as it is today.*

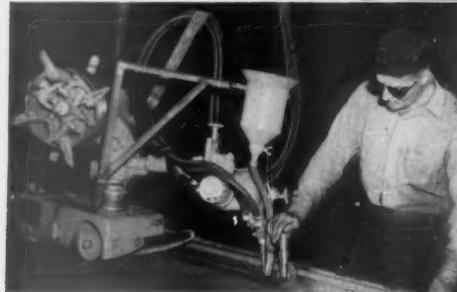


UNITED STATES STEEL



Serving Railroads at Every Turn

Linde
TRADE-MARK



Above: Continuous Rail Laying

Left: Rolling Stock Fabrication and Repair

Below: Structure Welding and Cutting



In shops, on bridges, and along the right of way—LINDE's modern metalworking processes are helping the nation's railroads maintain efficiency, and modernize for the future . . . at minimum cost and time.

Backed by over 40 years of accumulated know-how, LINDE's unmatched engineering facilities are being used to help customers solve welding, cutting, and heat-treating problems of all kinds. Coast to coast, LINDE engineers and service representatives are helping the railroad industry constantly to improve road and shop fabricating operations.

For a complete line of modern electric welding, oxy-acetylene welding, oxygen-cutting, flame-hardening, and continuous rail welding apparatus—*look to LINDE*.

RAILROAD DEPARTMENT
LINDE COMPANY

DIVISION OF



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The familiar symbol of over forty years' service to the railroad industry.



"Linde," "Oxweld," and "Union Carbide" are registered trade-marks of Union Carbide Corporation.

For Protecting Freight Cars...

Should a freight car be a "traveling billboard" or an entirely utilitarian vehicle? Should its protective coat be applied strictly for protection, or is there advertising value worth the cost in bright paint schemes?

These are questions the railroads are considering as new cars come off the production lines, improved protective coatings are developed, new emphasis is placed on promotion and advertising of railroad service.

Railroads differ in their approach to the problem of protection, of course. Climatic conditions aren't the same the country over, and neither are the conditions under which freight cars of the same type are used. Here, for example, is how two midwest railroads are finding what they're looking for, one with bright red paint, the other with asphalt mastic.

Fire-Engine Red

All Minneapolis & St. Louis rolling stock eventually will take on a modern look with a new lettering design. Locomotives, cabooses and most cars will be brilliant in fire-engine red and white. Gradually disappearing are the greens, yellows and browns of former color schemes.

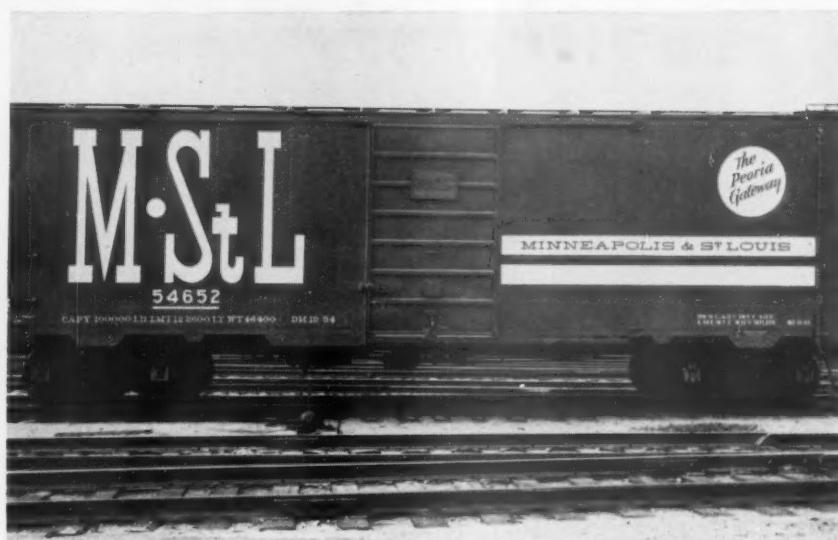
The M&StL management feels that bright paint is good railroading. A search of available products found a paint which stood up well under "weatherometer" tests. Despite the bright color, equipment will require painting only about half as often as with the old colors. And the simplified color scheme has permitted the road's paint inventory to be reduced from 54 colors to 12.

Car for car, the new paint scheme costs only a nominal amount more than that formerly used, the M&StL reports. And the road is willing to accept that increase in return for what it considers the advertising value of the brilliant and modern-looking design.

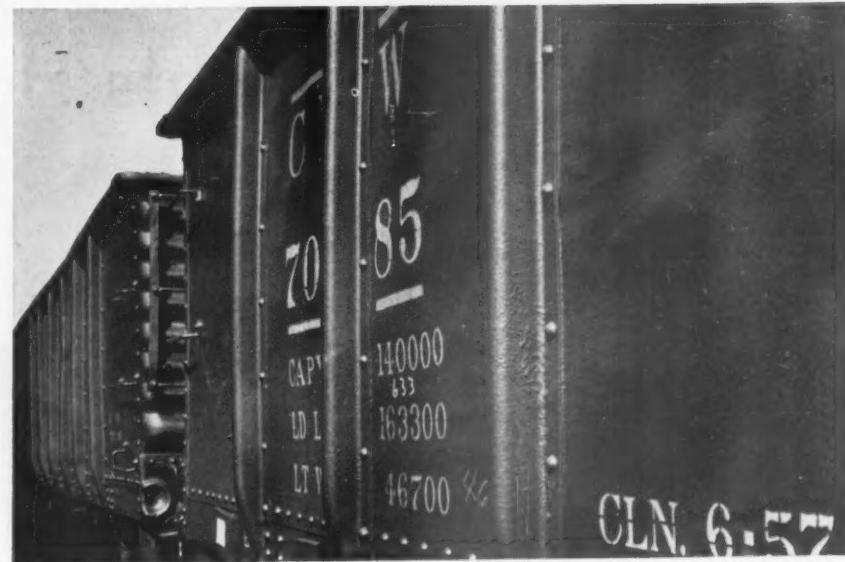
Asphalt Mastic Protection

The Chicago & North Western thinks it's found the answer in a 1/16-in. coating of asphalt mastic protective material. Gondola cars coming out of the road's new shop at Clinton, Iowa, are finished this way, and the road has hopes of turning to the mastic for even further use on freight equipment.

Asphalt mastic coatings were developed primarily for open-top cars which receive rough treatment, although several roads



Paint...



...or Mastic?

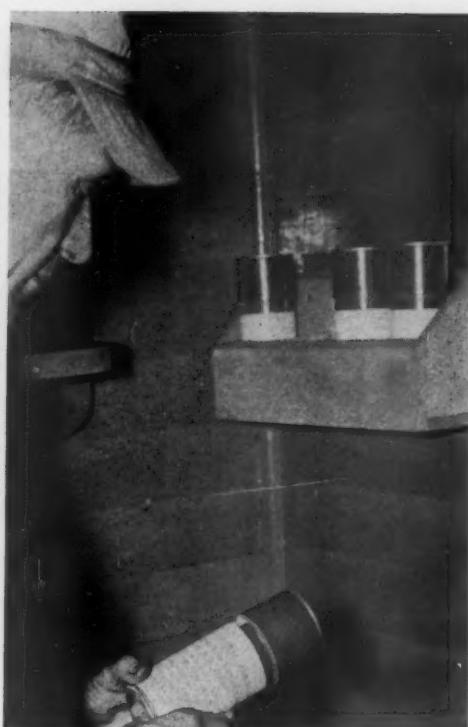
have used them on box cars. They're not a complete substitute for paints, especially where cars are loaded with corrosive materials, but the North Western likes the mastic because it is applied easily, dries fast, and provides a comparatively flexible coating which won't chip or scratch easily. The road hopes to see its cars go six years, on the average, using this material, before

they need another protective treatment.

Gondolas coming out of Clinton are coated in traditional red oxide (the mastic also is available in black) but that doesn't appear to worry the North Western. One officer put it this way: "The best advertising a railroad can have is a fleet of good cars to serve the shippers—and to keep them moving!"



FIRE . . .



. . . CHEMICAL . . .



. . . OUT

New Weapon Fights Hot-Box Fires

After two years of experimenting, a one-pound, shaker-type container filled with a dry chemical has been developed by the Illinois Central, in cooperation with a leading fire extinguisher manufacturer, for use by train crews in extinguishing hot-box fires.

Installation of racks holding four of the containers was recently authorized for cabooses and locomotives over the entire railroad.

Non-abrasive and non-poisonous, the dry chemical is 98 per cent baking soda. In operation, the top of container is pulled off, exposing a perforated top. The chemical is applied by vigorous wrist action, flipping the chemical into the journal-box fire, or on the outside of box if that is first necessary. Instructions for operation of the containers are posted in cabooses. Labels on the containers explain the method of operation. The containers, two of which easily fit in the pockets, are made of cardboard, with a metal diffuser on the top and a metal bottom.

Development of the dry chemical container was the result of the IC's determination to reduce hot-box fires and accom-

panying losses. In 1954, three large fires, within a few weeks of each other, resulted in almost \$50,000 loss. Last year, 24 fires caused by hot boxes resulted in more than \$38,000 loss.

The use of a dry chemical for extinguishing hot-box fires first came to the attention of R. M. Bostick, the railroad's superintendent of fire prevention, in the form of a four-ounce package for inserting in the journal box without pulling the packing. After experimenting with some 75 packages, he was convinced that a dry chemical was the proper medium, but felt the best and most economical means of applying it remained to be developed.

Thorough Tests

Experiments were made with pump type containers, pressure containers and many others. Further tests were made to develop the proper weight of container. It was finally determined that one pound of the dry chemical, properly applied to a fire through a diffusive top by wrist action, would extinguish any conceivable hot box fire, providing the floor or walls of the freight car had not been ignited.

Four different experimental models of containers, all of different weights, were prepared by the cooperating manufacturer. These models, plus several others, were tried out for two years on parts of two Illinois Central divisions.

After the material and weight of the successful model was decided upon, experiments were authorized on a unit of four one-pound containers on cabooses of the Memphis, Mississippi, Louisiana and Vicksburg divisions. On the basis of five months' tests on these divisions, use of the containers was authorized for the entire railroad.

"As far as we know, we are the first railroad using this particular type of container," Mr. Bostick says.

While the dry chemical extinguisher does not lend anything to the elimination of the cause of hot boxes, it is effective in extinguishing the resulting fire. While extensive research is continuing at the research laboratory of the AAR to find a way to eliminate hot boxes, the Illinois Central has proved that resulting fire losses can be prevented if the hot journal is discovered in time and the dry chemical properly applied.

RUST-OLEUM Protects Metal... Saves Even Badly Rusted Surfaces!

The Practical Way To Cut Maintenance
Costs — Add Extra Life To
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Tanks, Metal Equipment!

Here's how easy it is to stop rust with RUST-OLEUM! Simply apply RUST-OLEUM by brush, dip, or spray directly over rusted surfaces . . . after removing rust scale and loose particles by wirebrush and sharp scrapers. Costly sandblasting and chemical pre-cleaning are not usually required. Dries to a firm, elastic, durable coating. See how RUST-OLEUM can cut your maintenance costs. Specify RUST-OLEUM for all new construction, maintenance, repair or rebuilding.

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Send for your free
copy of this new
catalog today—for
the facts on how
RUST-OLEUM can cut
your maintenance
costs.



In All Colors,
Aluminum and White

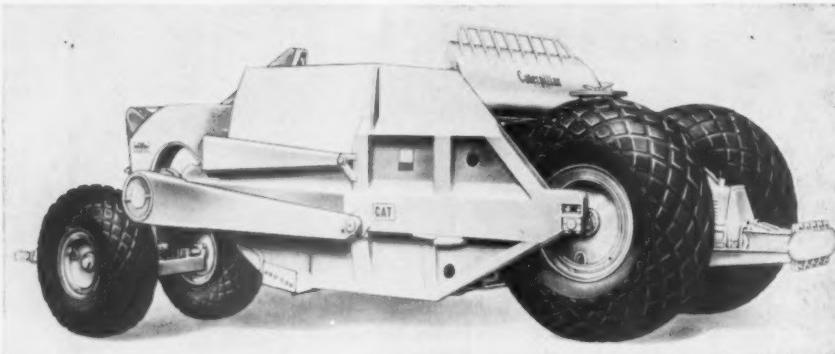
RUST-OLEUM STOPS RUST!



Stopping Rust
with RUST-OLEUM
769 D.P. Red Primer



New Products Report



One-Man Pipe-Pusher

The "Pow-r Mole" is an attachment designed to replace the bucket on any standard tractor-mounted backhoe. It makes a one-man job out of underground pipe-pushing operations, according to the manufacturer. The device features tempered tool steel driving jaws and a 4-in. driving stroke. According to the builder, one man can dig the necessary trenches, attach the unit, insert pipe sections and operate the tractor hydraulics. *Pow-r Devices, Inc., Dept. RA, Clarence Center road, Clarence Center, N. Y.* •



Telephone Truck Body

For telephone and communications work the 1-40 Installers Body provides maximum but easily accessible storage space for parts and materials. Overall length is 81 in.; width, 58 in. (approximately 6 ft across the fenders). The body is designed for installation on any standard chassis. Space is provided for either 4-ft or 6-ft ladders, as well as all other normal installation and maintenance equipment—apparatus, pay-out reel, wire, belts and materials. *Utility Body Co., Dept. RA, 1530 Wood st., Oakland 7, Cal.* •

Rusty Surface Primer

Rusty surfaces can now be coated with Zinktron prime coating, reported to be stronger than red lead primers. Zinktron is a zinc based paint that gives chemical as well as mechanical protection. The binding material is said to be so fine that the majority of the zinc particles are in direct contact with the metal it is applied to. The difference in the potential of the two metals gives the added protection. *Constad Laboratories, Dept. RA, 85-02 162nd st., Jamaica 32, N. Y.* •

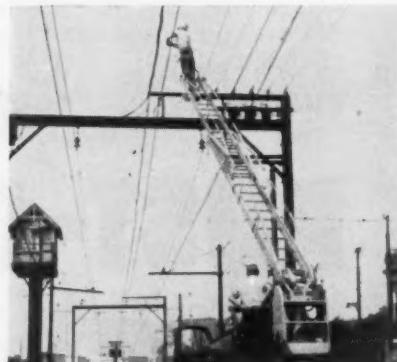


Punched-Tape Typewriter

This electronic punched-tape typewriter produces tape as the operator prepares a source document. When tape previously punched is fed into it, it automatically reads and types out information at 120 words a minute. It is available in three basic models—a tape punching unit, a tape reading unit and a unit that does both. The manufacturer describes the device as particularly useful to the smaller office. *Remington Rand Division, Sperry Rand Corporation, Dept. RA, 315 Fourth ave., New York 10.* •

High-Capacity Scraper

A new, large capacity scraper has been made available for the D8 and D9 Caterpillar tractors. The No. 491 scraper offers increased payload capacity to provide the earthmover with a high-yardage scraper designed to match the power of the large track-type tractors. The No. 491 replaces the manufacturer's former Model 90. Its payload is 82,000 lb—12,000 lb greater than its predecessor. The new scraper has a struck capacity of 27 cu yard and a heaped capacity of 34 cu yard. *Caterpillar Tractor Company, Dept. RA, Peoria, Ill.* •



Aerial Ladder

This hydraulic aerial ladder can be raised, lowered and rotated by remote platform controls as well as from the ground. Remote control handles are depressed and moved back and forth from center to stop in the direction of the desired movement until proper speed is reached. Then, the still-depressed work handle is returned to center and held until the ladder approaches the work area. The ladder can be stopped suddenly by releasing the handle. Fast reverse movements bring the ladder to a more gradual stop and avoid excessive strain on the rotating mechanism or ladder section. An emergency-stop pushbutton, connected to the pedestal controls, is just below the remote control levers.

This ladder rotates the full 360 deg and elevates to a 75 deg angle. It is available with maximum ground-to-platform heights of 27, 31 or 35 ft. Hydraulic power is generated by a power take-off or separate engine driven pump. Extension and retraction of the ladder are controlled at the base by one of the three main control levers. *J.H. Holan Corporation, Dept. RA, 4100 West 150th st., Cleveland 11.* •



HELPING TO KEEP YOUR RAIL SAFE

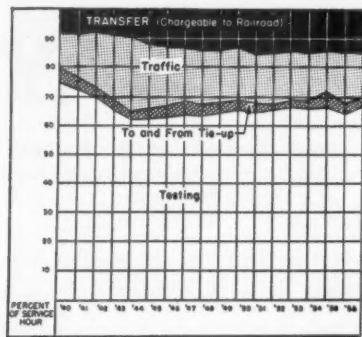
DEFECT 1,500,000



Rail defect 1,500,000 was found by Sperry Detector Car 130 on January 4, 1956. It was a 40% transverse fissure and no external sign of the defect was visible to reveal its presence.

Among the many important benefits which Sperry Rail Service provides its customers are some which, like the 1,500,000 defect, can't be seen on the surface. For example:

Group testing . . . the successive testing of rail in track of a number of railroads — from line to line without delay—is a cooperative method that keeps the Sperry Car on the job rather than on a siding. Among its major benefits are *reduced costs of transfer, layover and traffic interruption*—lowering, in turn, inspection costs to railroads.



Notice in the chart that the lowest percentage for testing within a single service hour is better than 60%, with a high of 75%. Never, in the past 14 years, has it been below 60%.



Group testing is a procedure that benefits all who use it. Yet it is only one of the extra advantages of Sperry Rail Service. The efficiency of Sperry equipment and personnel, which results in the detection of more and smaller defects . . . assures the safety and soundness of millions of miles of rail in track.



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You're on a fast reading schedule...



So is the new

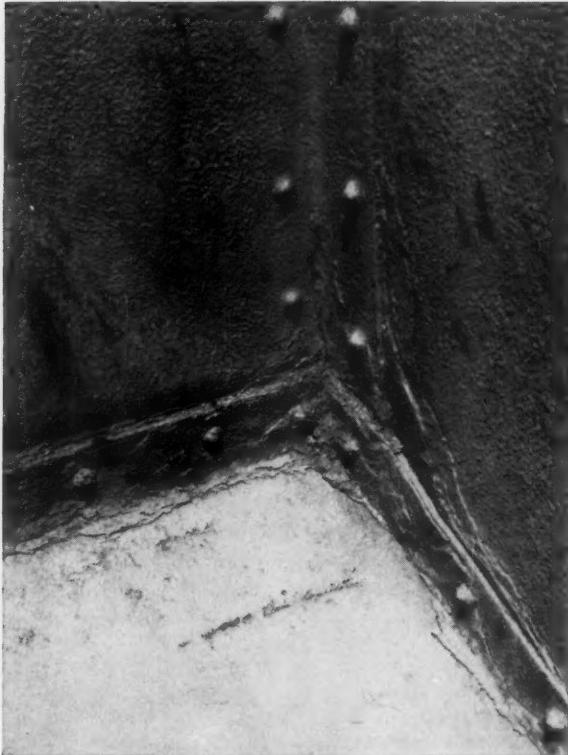
RAILWAY AGE

Here, in *Railway Age*, you're now getting today's top RR news in less reading time than ever before. We're operating on a philosophy of magazine publishing in a new key — but surprisingly simple. It's this. *The reader is busy*. Give him the news he wants — but don't waste his time. How are we going about it?

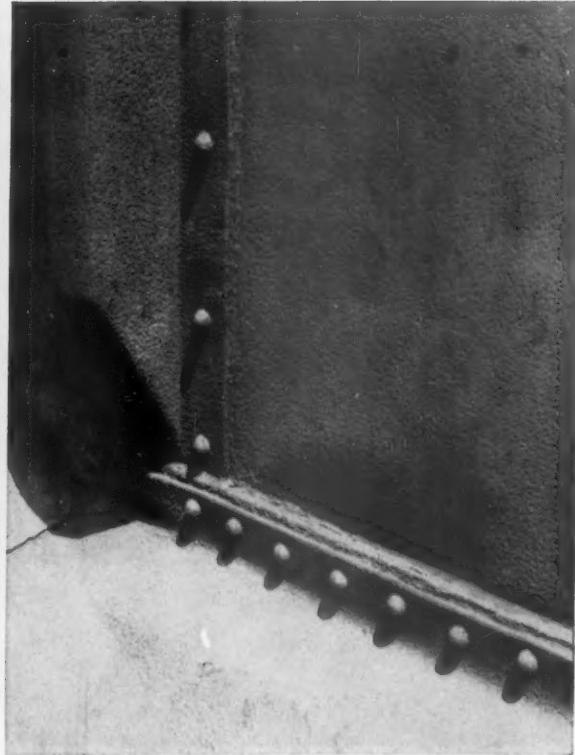
- a new, dramatic cover that tips you off on the hot content of each issue
- modern binding — book opens flat, making for easy reading
- pictures that are picked, layed-out, to tell stories-without-words that save you time
- an editorial style of writing long on ideas — short on words
- an easy-on-the-eyes format — cover to cover — that looks smart because behind it there's the smart awareness of publishing techniques that meet the needs of today's readers

Look around in *your* magazine — the industry's *only weekly*. You'll get the idea — fast.

a Simmons-Boardman **TIME-SAVER** magazine
30 Church St., New York 7, N. Y.



A copper-bearing steel



A nickel-copper high strength low alloy steel

How Corrosion Research helps lower car maintenance costs

Examine these hopper car interiors. Both have seen ten years of similar service.

Look first at the picture on the left. This is a copper-bearing steel with a good measure of corrosion resistance. Yet notice the rust, the spalling.

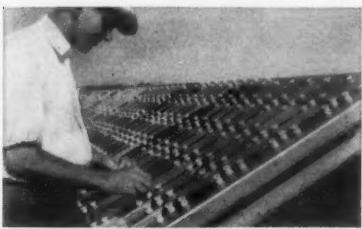
Now look at the picture on the right. This is a nickel-copper high strength low alloy steel. All you see is a thin, tightly adherent oxidized surface . . . a surface that protects

the base metal, slows the progress of corrosion. This car should provide at least 50% longer life for its owners before it must be repaired.

A product of corrosion research

Since 1925, nickel-copper steels have been under study by Inco. The goal: to find low cost alloy steels for car frames and plates with improved corrosion resistance and higher strength . . . and reduce the staggering repair bill caused the industry by corrosion each year.

As one family among a host of corrosion-resisting materials that are improving operating economy throughout industry, nickel-copper steels have done a good job. Cars keep rolling longer, need less shop work, and are lighter, permitting bigger payloads.

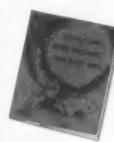


Inco Corrosion Research at Kure Beach, near Wilmington, N. C. Here, atmospheric corrosion data gathered over many years on thousands of specimens provides answers to one of industry's most urgent problems.

If you have a corrosion problem...

You owe it to yourself to talk with Inco's corrosion engineers. They have gathered data on hundreds of metals, alloys and coatings. It's data that was gathered to help you.

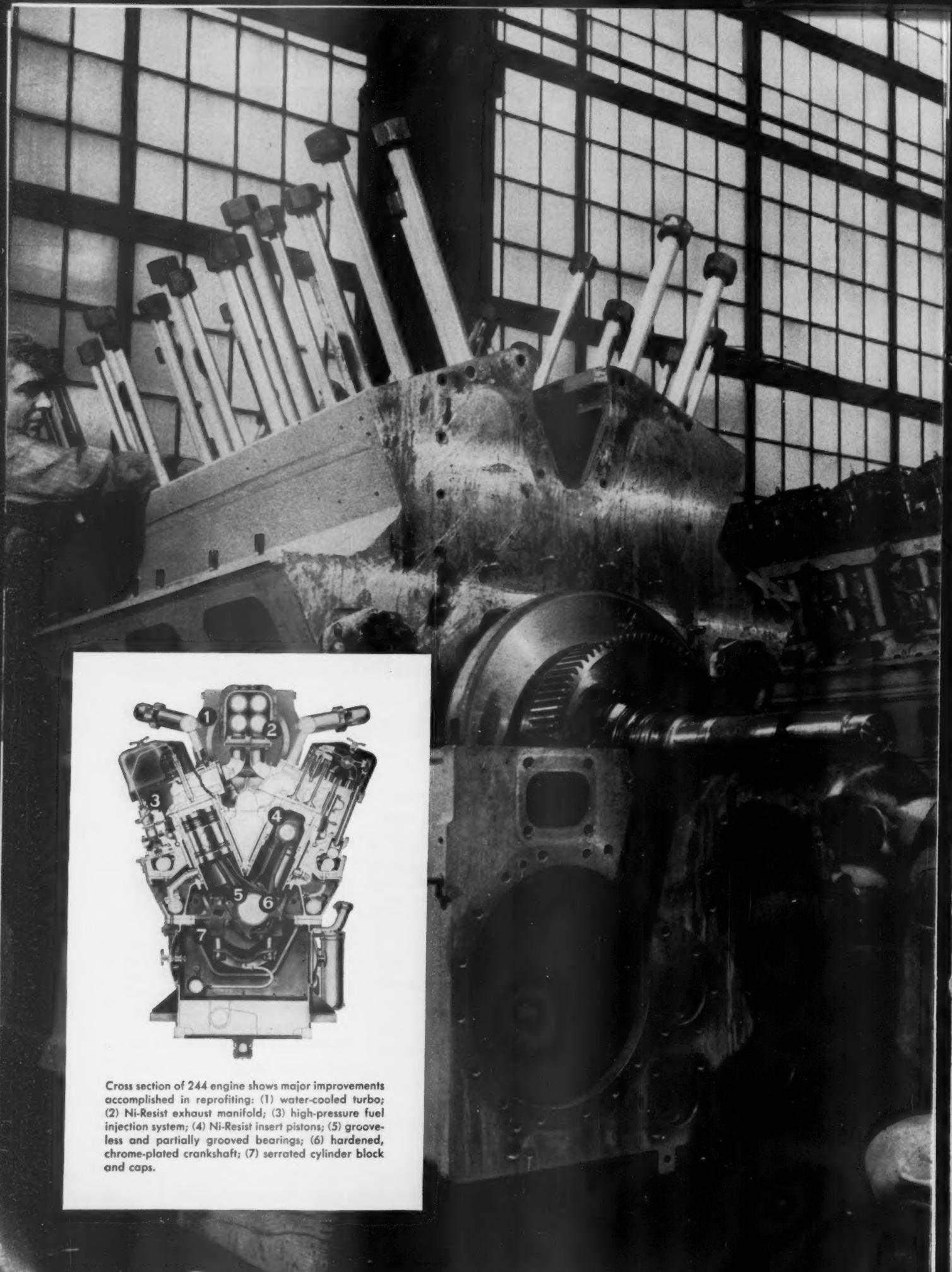
48 Pages of Help: compositions, fabricating and welding characteristics, corrosion resistance and mechanical properties of nickel-copper high strength low alloy steels are discussed in the Inco booklet "Nickel-Copper High Strength Low Alloy Steels." Please drop us a card for your copy.



The International Nickel Company, Inc.

67 Wall Street  TRADE MARK New York 5, N. Y.

INCO NICKEL



Cross section of 244 engine shows major improvements accomplished in reprofiting: (1) water-cooled turbo; (2) Ni-Resist exhaust manifold; (3) high-pressure fuel injection system; (4) Ni-Resist insert pistons; (5) grooveless and partially grooved bearings; (6) hardened, chrome-plated crankshaft; (7) serrated cylinder block and caps.

REPROFIT

YOUR LONG-SERVICE ALCO LOCOMOTIVES

New ALCO program reduces maintenance costs, raises locomotive availability; returns are large for small investment

We call it "reprofiting"—a way you can obtain a much higher return on your long-service ALCO 244-powered locomotives at a small investment. It's a return that—if you are operating more than a few locomotives—can run into six figures a year. That's important money, and this is how reprofiting works to gain it for you.

Reprofiting lowers the operational cost per mile of long-service locomotives. Diesel-engine design and performance standards have changed markedly in the past ten—or even five—years. Substantial design improvements have been made in the 244 engine, particularly in areas where maintenance was high. Result: engine maintenance costs can be reduced materially by the reprofiting process, which includes application of improvements such as hardened crankshaft, better bearings, water-cooled turbo, Ni-Resist exhaust manifold, serrated fit between caps and block and others.

Reprofiting adds locomotives to the fleet. Programs nearing completion have demonstrated that substantial increases in mileage per month per unit are the result. Design improvements provide increased service life and assure greater dependability.

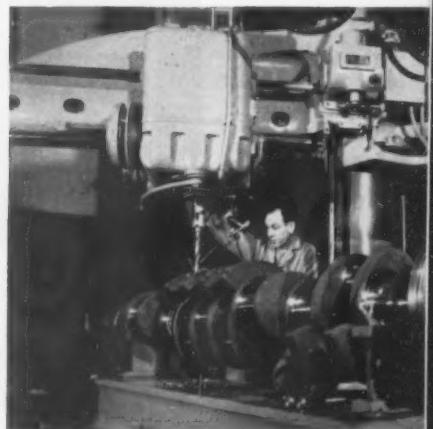
The cost of reprofiting is low. And the least expensive way to accomplish it is through ALCO's programmed plan. ALCO has the equipment, the personnel and the techniques to accomplish this work at the best price. All work done in ALCO reprofiting, as well as the parts applied, is covered by an ALCO warranty.

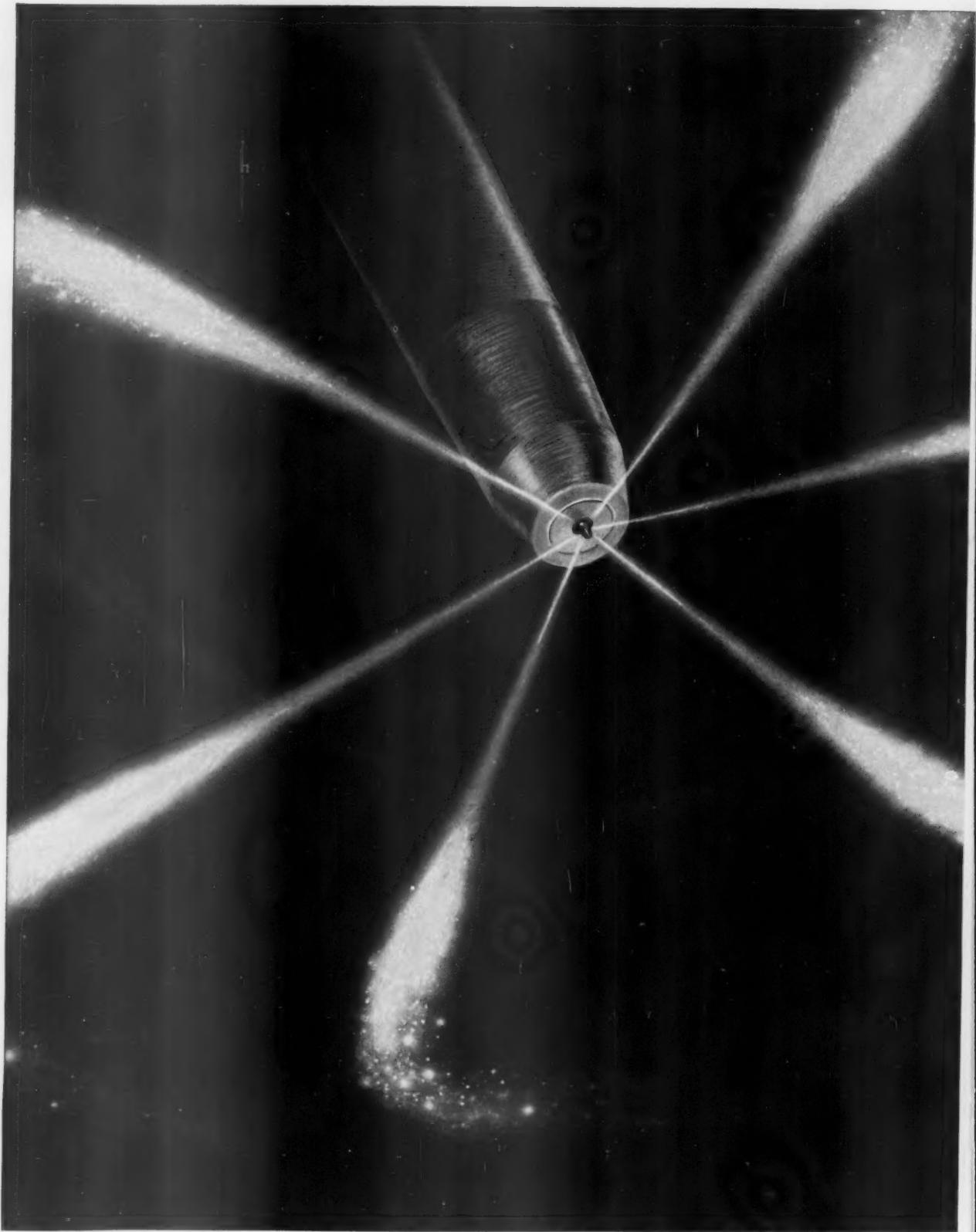
We hope you will investigate reprofiting. Your ALCO representative can give you more details, and he will work with you in developing specific data and in drawing up a reprofiting plan. Or, if you wish, you may initiate action by writing Transportation Products Division, Dept. TR-2, P. O. Box 1065, Schenectady 1, N. Y.

ALCO **ALCO PRODUCTS, INC.**
NEW YORK
Sales Offices in Principal Cities

◀ ALCO completely remanufactures 244 engines in reprofiting schedule. Engine is dismantled, cleaned, parts repaired, major improvements applied. ALCO's programmed plan of reprofiting incorporates best features of unit exchange and repair-and-return.

Special ALCO facilities, such as those for chrome-plating crankshafts, lower the cost of reprofiting for you. You also get the advantage of work done by specialists who know the engine best. Shaft, right, has been chrome-plated for hardness and machined back to original dimensions, now is being balanced. Cost: a fraction of that of a new shaft.





Thorough, even combustion takes place when the new-type fuel is sprayed into diesel cylinder from injector tip. Noncombustible fuel particles have been treated with additive so that now *all* the fuel burns thoroughly. Illustration shows how

edges of fuel spray catch fire first. Rest of the fuel is ignited evenly as it comes from the injector. New fuel insures efficient diesel operation . . . and costs less. This helps keep your freight costs from skyrocketing.

What's new on the New York Central

Central research "strikes oil" by discovering a powerful new diesel fuel to haul your freight more efficiently

If you ship by the Central, then you have a big financial stake in the "gusher" that the railroad's research scientists have brought in—at Cleveland!

Members of the 80-man staff at the Central's new Technical Research Center have developed a powerful new fuel from a refinery by-product that could never be used in diesels before. This new type of fuel delivers *more horsepower per gallon* than ordinary diesel oil . . . and is a *penny per gallon cheaper!* Even this small saving can cut the Central's fuel bill by \$2,500,000 a year!

Burning up the budget

Today oil is our biggest budget expenditure—next to wages. This economical new fuel will help us keep your freight rates from rising astronomically—even though costs are rising almost everywhere else in our freight operation.

Four diesels engaged in regular freight service have been operating successfully for several months on the new fuel. Crews knew some sort of tests were being made with their engines—but were given no other information. At the end of the test period, engine performance was reported to be equal or *improved* in all cases.

Big investment pays off

The new fuel was developed after long and intensive experimentation at the Central's million-dollar Cleveland Technical Research Center.

With an electron microscope, Central's scientists studied the physical make-up of the refinery by-product in great detail. They discovered that by means of an additive, certain noncombustible particles could be made to burn—so the fuel would deliver its full power.

The Research Center has dozens of other projects under consideration, too. Priority goes to those that will contribute the most to better railroad service . . . offer the most savings. Researchers are continually trying to improve fuels . . . are investigating new freight car construction, new loading devices . . . better design of equipment from signal light bulbs to broom handles.



Key to the discovery of the new fuel was the powerful electron microscope. The Central was one of the first railroads in the country to obtain such equipment.

Research is just one of the things that's new on this progressive "new" railroad. Ask our freight salesman about some of the other recent developments that will help us move your freight faster, safer and more economically than ever before.

Route of the "Early Birds"—Fast Freight Service
New York Central Railroad

AVAILABLE FOR PURCHASE

*modern
air-conditioned*

LUNCH COUNTER LOUNGE CAR



- Lightweight—137,000 pounds
- High strength, low carbon steel construction
- 20 seats in lounge—8 booth seats—12 stools at lunch counter
- Overhead steam-ejector heat and air conditioning system
- 32-volt incandescent lighting
- Interior finish steel and pressed wood—blue color scheme
- Stainless steel exterior—fluted below windows
- Roller bearing journals
- Built in 1946



Address inquiries to
L. J. Ahlering
Vice President,
Purchasing Agent

CHICAGO & EASTERN ILLINOIS RAILROAD
332 South Michigan Avenue • Chicago 4, Illinois



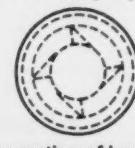
"FLUSH" WITHOUT COUNTERSINKING

Lewis sealite car bolts



"Wood engineered" for a smooth level-with-the-surface moisture tight seal without countersinking . . . Sealite fins bear against wood on a radial plane to prevent turning when nuts are set. Available in Hot-Dip Galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

Bolt available
with Loktite
Nut No. 2 or
std. sq. (shown)
and hexagon
nuts.



Cross section of head from
above, showing fins,
bevel and shank.

All products are manufactured in the U.S.A. to A.S.T.M. specifications.



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SPECIAL REPORT TO THE CONGRESS OF THE UNITED STATES!

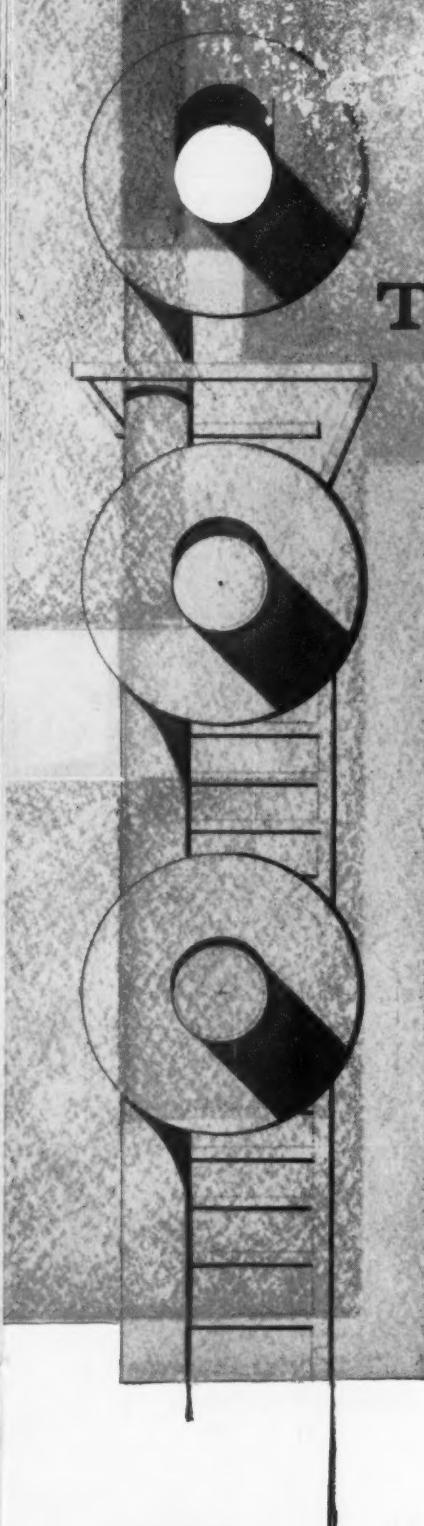
When? October 7th Railway Age.

It's controversial . . . it's a much needed report that's been a long time coming. One of the hottest issues ever to come off our presses! It will be the talk of the entire country!

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TOMORROW!



arriving on Track 9

Everything about Chicago, Rock Island & Pacific Railroad's new "Jet Rocket" suggests tomorrow—low, glistening beauty, smooth, floating ride, vast picture windows, super speeds. All of these innovations signal a completely new, more comfortable, more efficient era of train travel.

This Talgo-type train of tomorrow rides on wheels that have proved their dependability through years of service—USS Multiple-Wear *Wrought* Steel Wheels. These wheels are well prepared for the rigorous demands of the future because of the manufacturing process by which they are made . . . the *Wrought* process.

American Car and Foundry's major objective in building the "Jet Rocket" was to provide the utmost in speed, safety and comfort at the least possible cost. USS Multiple-Wear *Wrought* Steel Wheels fit into this pattern exactly. They can take prolonged wear, severe braking and high-speed impacts because they are extremely tough and ductile. Thus, they are reliable, thanks to the forging process by which they are made.

In addition to all passenger applications, USS Multiple-Wear *Wrought* Steel Wheels are highly practical for freight service—a fact proved by the many far-sighted railroad men who are already reaping the benefits of greater dependability and economy offered by these tough, long-wearing wheels.

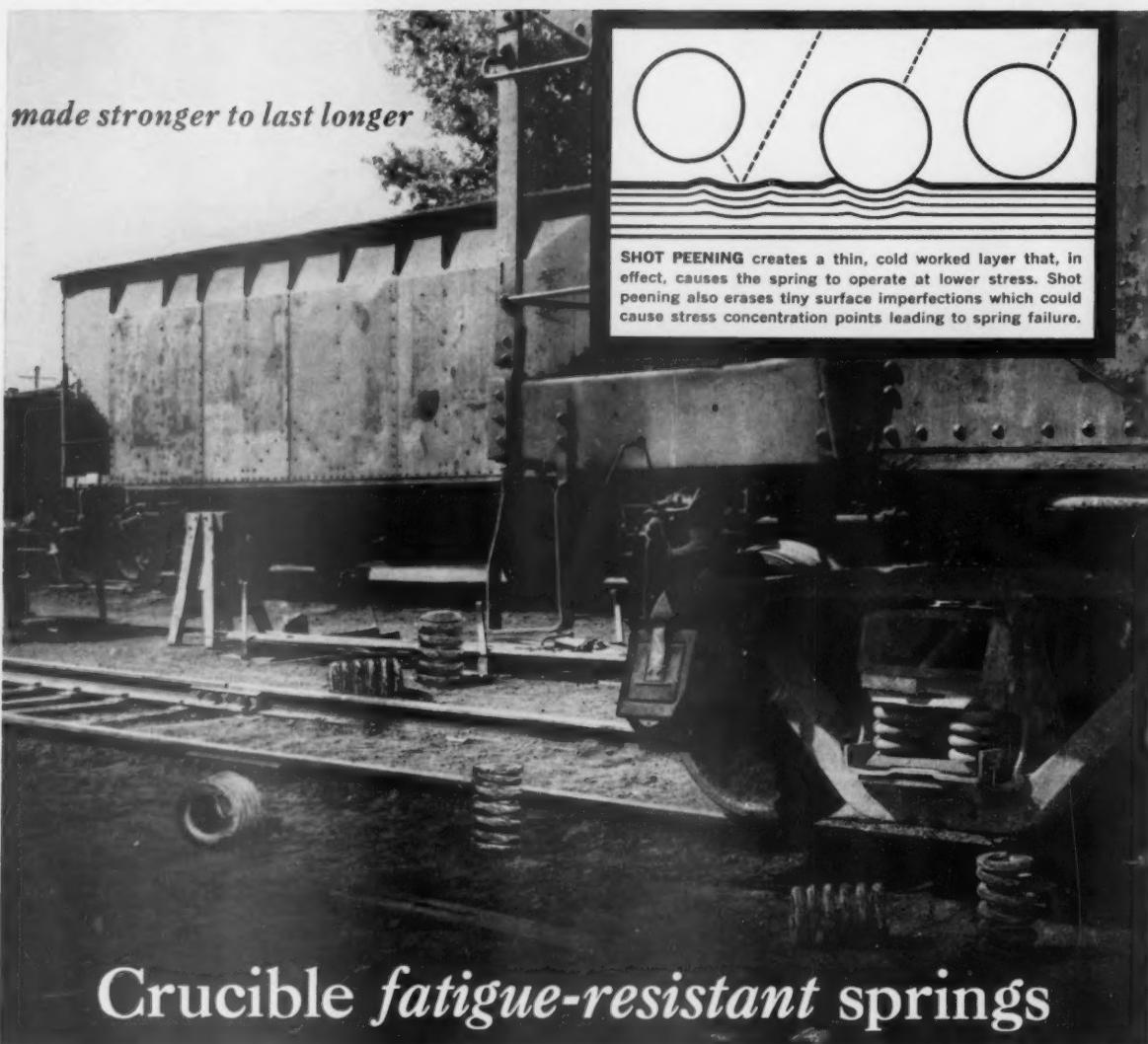
USS *Wrought* Steel Wheels are produced at two strategically located plants: The McKees Rocks (Pittsburgh), Pennsylvania plant, serving the East and Southeast; and the Gary, Indiana plant, supplying the Western and Southwestern lines.

UNITED STATES STEEL CORPORATION, PITTSBURGH, PA. • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS WROUGHT STEEL WHEELS

UNITED STATES STEEL





Crucible *fatigue-resistant* springs help keep cars off the repair tracks

Three major railroads report: 90% of all car springs fail due to permanent set — only 10% due to other causes. You can reduce the frequency of failures by using Crucible's single heat treated *fatigue-resistant* springs. They're *made stronger to last longer*, yet cost no more than conventional springs.

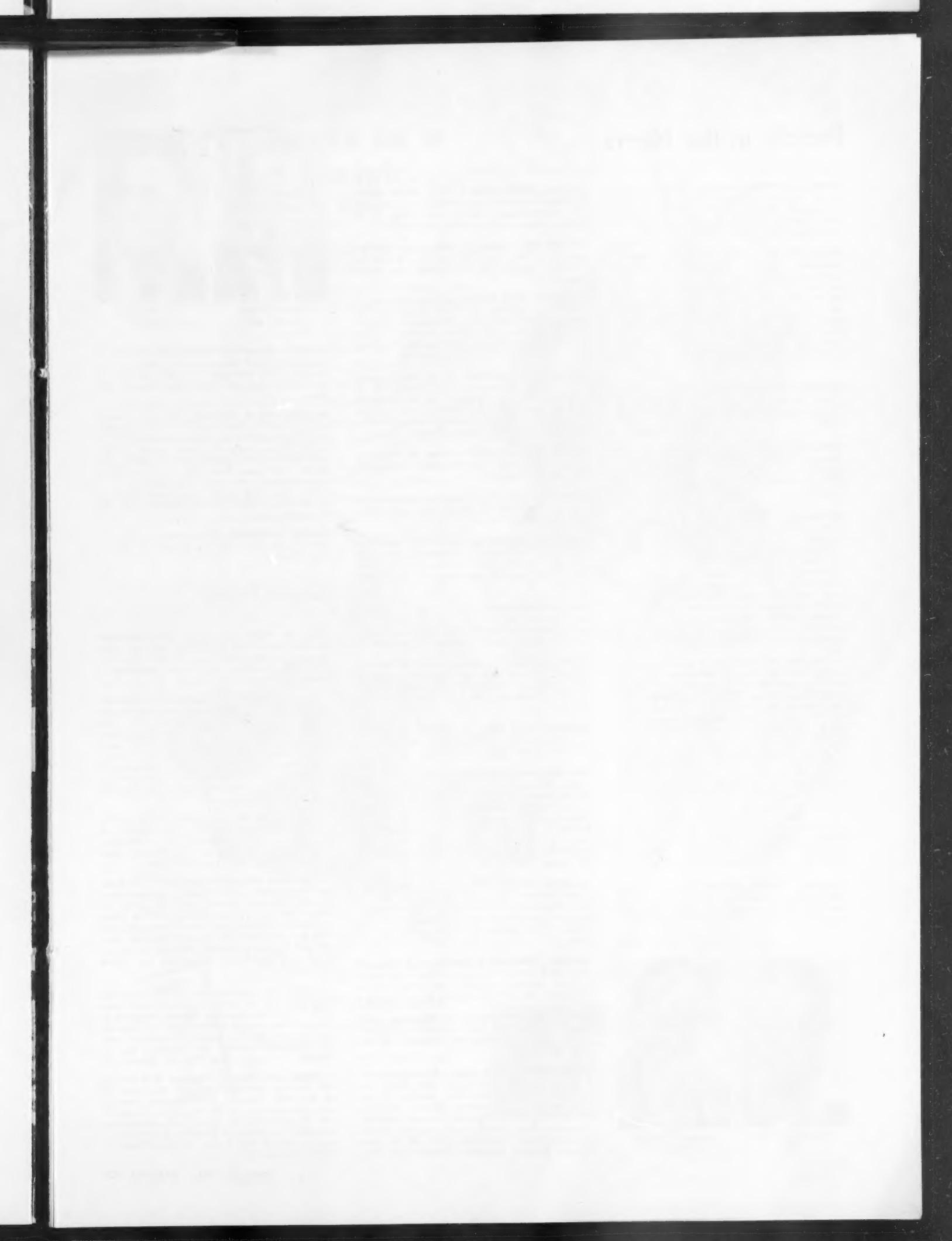
Crucible *fatigue-resistant* springs are stronger because they're single heat treated and shot peened. These processes provide better

hardenability, higher elastic limits and greater resistance to working stresses.

Help keep cars off the repair tracks and reduce "bad-order" car expenses by using Crucible *fatigue-resistant* springs. They're your best guarantee of long, low-cost spring service. For further details, write for folder: *Spring Division, Crucible Steel Company of America, McCandless Avenue, Pittsburgh 1, Pa.*

CRUCIBLE spring division

Crucible Steel Company of America



People in the News

ALTON & SOUTHERN.—Robert K. Keineman, director of industrial relations, Aluminum Company of America, Pittsburgh, Pa., elected vice-president, Alton & Southern, East St. Louis, Ill., effective January 1, 1958.

BURLINGTON—R. E. Taylor, mechanical engineer, appointed engineer equipment (design and maintenance), Chicago, and D. V. Hon, superintendent car department, named assistant engineer equipment (design and maintenance), and their former positions abolished. William Bauer, general car inspector, lines east of the Missouri River, appointed assistant engineer equipment (design and maintenance), and is succeeded by J. J. Mathieu, mechanical inspector.

CANADIAN NATIONAL—J. L. Cann, district engineer, Vancouver, B. C., transferred to the Montreal district, succeeding E. S. English, promoted.

CANADIAN PACIFIC—Roland E. Wilkes, manager, Canadian Pacific Transport Company, Winnipeg, Man., named manager, piggyback services, CPR, Montreal, Que., with system-wide jurisdiction.

CHESAPEAKE & OHIO—Gregory S. DeVine, executive vice-president, Peabody Southern Coal Company, and president, St. Louis Coal Sales Company, joins the C&O September 1 as a vice-president at Cleveland.

William E. Turner, assistant to vice-president—merchandise traffic, Cleveland, appointed freight traffic manager—sales, Pittsburgh, succeeding J. Parker Donovan, transferred to Detroit.

George McCann, advertising and publicity manager, McDowell Company, Inc., Cleveland, appointed assistant to director of public relations, C&O.

H. M. Vise, Jr., assistant to general superintendent car department, Richmond, Va., promoted to assistant superintendent car department, Grand Rapids, Mich. S. M. Ehrman, general foreman car department, Columbus, Ohio, succeeds Mr. Vise. D. H. Richmond named assistant general master mechanic, Huntington, W. Va. Position of master mechanic at Huntington, formerly held by Mr. Richmond, abolished. Jurisdiction of J. C. Smith, general master mechanic, Richmond, now includes the entire Eastern region. L. H. Booth, general master mechanic, Huntington, assumes jurisdiction for the entire Central region.

K. J. Cahill named assistant auditor of expenditures—Northern region, Detroit. Arthur D. Florance promoted to assistant general coal traffic agent, Milwaukee, succeeding William R. Hanes, general coal traffic agent, retired.

CHICAGO & NORTH WESTERN—Donald R. Sherman, senior accountant of Arthur Anderson & Company, Detroit, appointed assistant auditor capital expenditures, C&NW, Chicago.

CHICAGO SOUTH SHORE & SOUTH BEND—Walter W. Weber appointed superintendent in charge of all transportation duties, succeeding D. E. Ferner, named acting general manager.

COTTON BELT—Clyde W. Fiddes, general solicitor, Tyler, Tex., appointed general counsel, St. Louis, to succeed John W. Murphy, who retires August 31.

FRISCO—Dr. R. H. Kessner appointed director of supervisory training, St. Louis, succeeding Paul Schmitz, named assistant to the general manager, Springfield, Mo. V. C. White, assistant division superintendent, Amory, Miss., named Dr. Kessner's assistant in the training program.

GREENVILLE & NORTHERN—S. M. Pinsky named president, H. E. Levine, vice-president, R. E. Priestley, assistant treasurer and D. U. Harrell, general manager. F. G. Homblen, vice-president and general manager, retired. General offices are at 150 Causeway Street, Boston, Mass.

KANSAS CITY SOUTHERN—Thomas M. Neale appointed dining car superintendent, succeeding P. E. Thomas, retired.

MISSOURI PACIFIC—J. E. Barclay appointed demurrage manager, St. Louis, Mo., succeeding T. R. Bondurant, retired.

NEW YORK CENTRAL—Joseph P. Flynn appointed community relations representative—assigned, primarily, to customer relations in New York area, with especial emphasis on NYC commuters.

ONTARIO NORTHLAND—C. H. Stevenson, auditor of revenues, North Bay, Ont., appointed assistant comptroller. H. W. Stuckey, assistant auditor of revenues, named auditor of revenues.

SANTA FE—Effective August 5, B. O. Bernard resumed his duties as superintendent, Los Angeles Terminal division, Los Angeles, following a leave of absence (Railway Age, July 8, p. 54).

SEABOARD—C. F. Kelly, trainmaster, Raleigh, N. C., appointed assistant superintendent, North Florida division, Jacksonville, Fla.

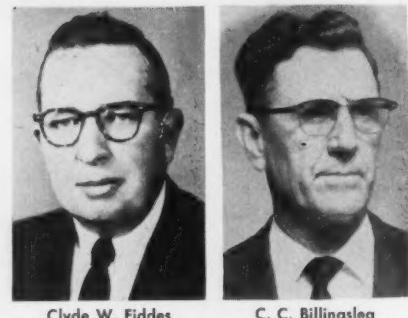
SOO LINE—Russell M. Olson, auditor of disbursements, Minneapolis, appointed assistant comptroller there, to succeed John E. Bertelson, deceased. Paul G. Anderson, assistant auditor of disbursements, named to replace Mr. Olson. Ronald A. Brachlow, general accountant, promoted to assistant to comptroller, and is succeeded by Ellsworth F. Nord, chief clerk in Capital Expenditure section.

SOUTHERN PACIFIC—Effective August 16, the Yuma division and the Los Angeles division consolidated, and P. D. Robinson, superintendent, assigned jurisdiction over the combined division which will be known as the Los Angeles division.

SPOKANE, PORTLAND & SEATTLE—F. G. Burgard, chief clerk revenue accounts division, appointed auditor revenue accounts, succeeding E. C. Michelson, who retired August 1.

TEXAS & NEW ORLEANS—C. C. Billingslea, signal supervisor, Houston, Tex., appointed signal engineer there, succeeding W. R. Smylie, who retired July 31.

UNION PACIFIC—R. M. Brown, district engineer, Western districts, Salt Lake City, Utah, appointed to the newly created position of district engineer, Northwestern district, Portland, Ore. J. W. Godfrey, Wyoming division engineer, Cheyenne, Wyo., named district engineer, South-Central district, Salt Lake City. W. R. Tyler, Kansas division engineer, Kansas City, Mo.,



Clyde W. Fiddes
Cotton Belt

C. C. Billingslea
T&NO

named to succeed Mr. Godfrey, and in turn is replaced by J. M. Bates, division engineer, Los Angeles. F. G. Schurman, assistant engineer on location working out of Omaha, succeeds Mr. Bates.

WABASH—Irvin H. Soldish, auditor, St. Louis, promoted to the newly created position of assistant general auditor. Aloysius J. Lampricht, auditor of disbursements, St. Louis, named to succeed Mr. Soldish, and in turn is replaced by Edwin J. Sonnhaus, chief clerk to the auditor of disbursements.

The New York traffic department offices of the Wabash are now located at Room 3100, 233 Broadway.

WESTERN MARYLAND—The Baltimore, Md., offices of this road are now located at 300 St Paul Place.

Supply Trade

John M. Welch has joined Olin Mathieson Chemical Corporation as Chicago regional sales manager for Olin Aluminum. He had been district sales manager for Kaiser Aluminum & Chemical Corporation in Chicago.

General American Transportation Corporation has completed a \$750,000 plastics research laboratory at its East Chicago (Ind.) plant. The laboratory is equipped to test all existing plastics and to develop new types and new uses. It is divided into three sections—a physical testing room, a unit to conduct research in reinforced plastics, and a section equipped for research on both vacuum-forming and injection molding of thermoplastics.

SKF Industries, Inc., has announced acquisition of Tyson Bearing Corporation, manufacturer of tapered roller bearings exclusively, at Massillon, Ohio. It will be known as Tyson Bearing Company, division of SKF Industries, Inc.

A. M. Byers Company and National Electric Products Corporation have entered an agreement whereby National Electric has been given exclusive finishing and marketing rights to Byers Company's Underwriters' Laboratories approved wrought iron electrical conduit. National Electric will market the conduit through its district offices and distributors throughout the United States.

Several U.S. manufacturers will participate in the exhibition of railroad equipment and supplies at the Pan American Railway Congress at Buenos Aires, August 30-September 13. Displays may be sent into the country for exhibit duty-free. Information about the exhibition may be obtained by cable from "Panriel, Baires."

Timken Roller Bearing Company launches its first network television program September 23 on the NBC network. A documentary dealing with construction of the Antarctic Turnpike will be presented. A second program dealing with the Presidency of Theodore Roosevelt and the pre-World War I era will be offered on NBC November 21.



Roland E. Wilkes
CPR



Gregory S. DeVine
C&O

Two Starts to a Better Finish... at Lower Cost

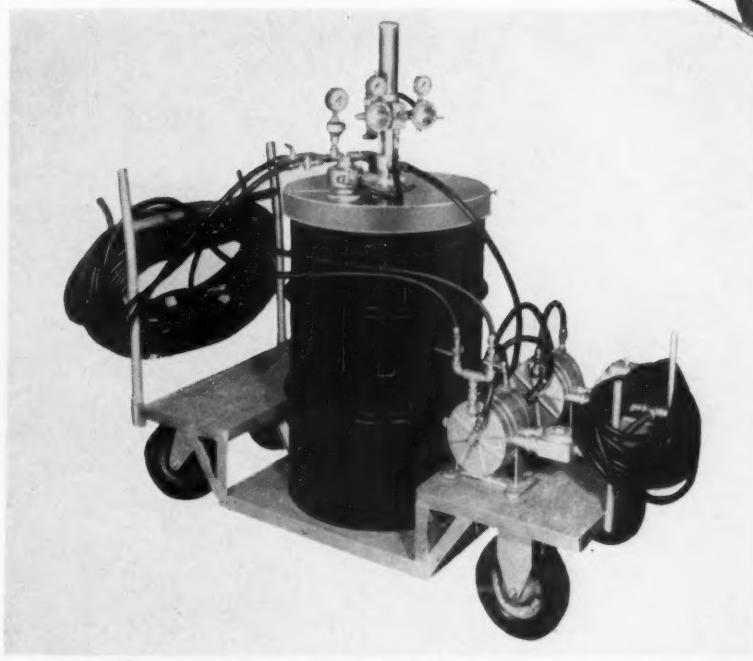
HOT SPRAY makes use of controlled heat to maintain constant paint viscosity. The results—better finish, shorter drying time, improved coverage and flow-out and sizeable savings in materials—are widely recognized by Railroads and carbuilders everywhere.

ALL THESE ADVANTAGES are now offered in two new Spee-Flo hot spray units specially designed to provide the portability and long hose lengths needed for maintenance painting in shops and yards. Completely self-contained, these new units combine the famous Spee-Flo hot spray heater and divorced action reciprocating pump in models which carry the original five or fifty-five gallon paint drum.

TEMPERATURE SELECTION is made automatically by means of a Dial-a-Matic controller. Circulation from heater to gun maintains constant selected temperature. These mobile units provide hot spray temperatures for one or two guns with hoses up to 75 feet long.



600 and 900 Series "Little Chief"
with five or ten gallon drum.



1200 Series Chieftan with 55-gallon drum.



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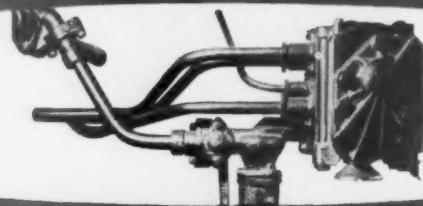
to get a better finish—write for literature including the booklet "Why Hot Spray?" Contains detailed case histories of hot spray applications.

CHECK THESE ADVANTAGES

- ✓ One coat application—labor savings to 50%
- ✓ Sharply reduced overspray
- ✓ Much faster drying time in all weather
- ✓ Better appearance and longer life through increased film thickness

ARRANGE FOR AN ON-THE-JOB DEMONSTRATION

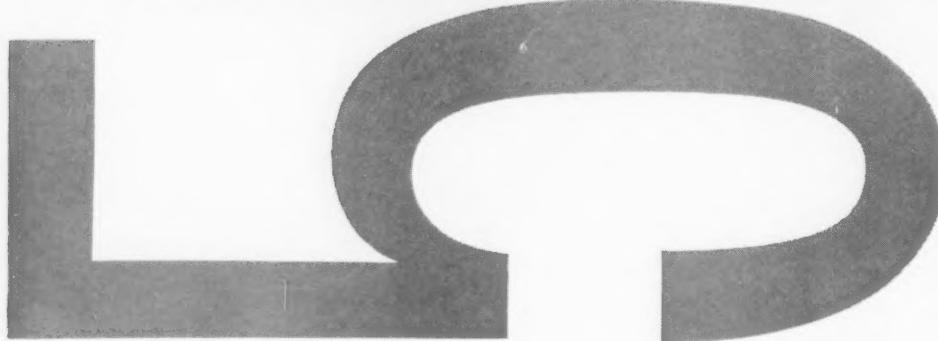
SPEE-FLO
MANUFACTURING CORP.
720 POLK AVE. HOUSTON, TEXAS



WROUGHT IRON AIR BRAKE PIPING STOPS



500 MODERN NORTHERN PACIFIC REFRIGERATOR CARS



List all the improved design features incorporated into Northern Pacific's fleet of 500 refrigeration cars and you would end up with several pages.

They range all the way from an increased truck capacity of 24% to greater door width which speeds up lift truck loading and unloading operations. A memo from the Line's Mechanical Engineer summed it up this way: "These cars are designed to better meet present day operating conditions, reduce maintenance, and provide more years of better car service."

Specific evidence of these lower maintenance and longer service life objectives is the use of wrought iron for the air brake

systems on all cars. More than 22,000 feet of this time-tested material was used to safeguard the all-important braking system against premature failure caused by corrosion and fatigue.

The cars, representing an investment of approximately five million dollars, were built at Northern Pacific's Brainerd, Minnesota, Car Shops.

Our Special Report, *The Use of Wrought Iron for Air Brake Piping*, explains wrought iron's resistance against shock and fatigue stresses, its excellent mechanical properties, and its ability to resist corrosion. Write for your copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS Wrought Iron Tubular and Hot Rolled Products
Corrosion costs you more than Wrought Iron

MARKET OUTLOOK *at a glance*

Carloadings Slip Just a Wee .03%

Loadings of revenue freight in the week ended August 10 totaled 740,471 cars, the Association of American Railroads announced on August 15. This was a decrease of 240 cars, or 0.03%, compared with the previous week; an increase of 25,264 cars, or 3.5%, compared with the corresponding week last year; and a decrease of 29,780 cars, or 3.9%, compared with the equivalent 1955 week.

Loadings of revenue freight for the week ended August 3 totaled 740,711 cars; the summary, compiled by the Car Service Division, AAR, follows:

REVENUE FREIGHT CAR LOADINGS For the week ended Saturday, August 3					
District	1957	1956	1955	Owned or leased July 1 1957	Stored July 1 1956
Eastern	111,680	108,732	124,336	26,841	25,641
Allegheny	142,755	108,624	151,620	3,165	7,227
Pocahontas	68,742	64,201	60,168		884
Southern	115,901	123,960	116,982		584
Northwestern	129,059	79,179	128,244		
Central Western	120,219	118,130	122,517		
Southwestern	52,355	57,461	56,620	612	663
Total Western Districts	301,633	254,770	307,381		
Total All Roads	740,711	660,287	760,387		
Commodities:					
Grain and grain products	61,367	59,711	57,369		
Livestock	4,942	8,758	5,801		
Coal	235,396	134,992	125,268		
Forest Products	41,774	49,730	46,881		
Ore	90,863	23,522	81,426		
Coke	10,670	4,532	12,986		
Merchandise i.c.l.	54,010	58,926	64,910		
Miscellaneous	341,689	320,116	365,746		
Aug. 3	740,711	660,287	760,387		
July 27	736,407	649,806	790,426		
July 20	743,359	648,492	781,908		
July 13	691,991	619,988	794,138		
July 6	535,334	478,297	648,992		
Cumulative total, 32 weeks	21,289,312	21,985,916	21,655,945		

IN CANADA.—Carloadings for the ten-day period ended July 31 totaled 132,433 cars, compared with 89,970 cars for the previous seven-day period, according to the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
July 31, 1956	133,876	45,347
Cumulative Totals:		
July 31, 1957	2,320,675	979,222
July 31, 1956	2,508,554	1,031,025
July 31, 1957	132,433	47,497

New Equipment

FREIGHT-TRAIN CARS

► **P-S Boosts Deliveries.**—Pullman-Standard Car Manufacturing Company increased freight car deliveries to 1,787 in July, compared to 1,667 in June and 1,009 in July of 1956.

LOCOMOTIVES

► **Diesel Curve Up, Steam Down.**—There were 70 new diesel-electric units installed in the month of June, as compared with 103 steam locomotives retired, according to AAR report summarized below. Class I roads owned or leased 26,841 diesels on July 1 and 26,771 on June 1; they owned 3,165 steamers July 1—3,268 a month earlier.

	Owned or leased July 1		Serviceable July 1		Waiting Shops July 1	
	1957	1956	1957	1956	1957	1965
Diesel (Units)	26,841	25,641	35	6	978	772
Steam (Locomotives)	3,165	7,227	884	584	580	722
Electric (Units)	612	663	10	10	75	65

New Facilities

► **Baltimore & Ohio.**—Announced plans for a new spur involving the largest single track cut ever constructed on its lines; four-mile segment will be completed by November 1958 to serve new coal-mining development near Mannington, W. Va. Cut will have maximum depth of 155 feet and would be cheaper than tunnel, engineering studies indicated.

► **Brazil.**—Union Switch & Signal has announced signing of million-dollar contract with Companhia Paulista de Estradas de Ferro to provide railroad with centralized traffic control for 75-mile strip from Bauru to Marilia; control machine will be at Bauru where similar unit is in service for 100 miles of CTC from there to Itirapina.

► **Canadian National.**—Is forming a new subdivision, the "Bartibog," to include 23-mile \$3,000,000 line being built from Bartibog, N.B., to new Heath Steele mine site for production of 120,000 transportable tons of lead, zinc and copper annually.

► **New York Central.**—Plans to build another modern classification yard at an as-yet unannounced site in its Southern District.

► **Soo Line.**—Will receive bids August 2 for replacement of swing bridge over the Sault Ste. Marie government canal with vertical lift span; project will be financed by U. S. government and the Sault Ste. Marie Bridge Company; work is expected to be completed in 1960.

► **Southern Pacific.**—Will build new cross-tie treating plant at Houston, Tex.; plant will use vapor drying equipment to season ties in matter of hours (compared to 12 to 15 months by air seasoning); project will begin in August and is to be completed in March 1959; estimated cost exceeds \$1,000,000.

► **Union Pacific.**—Will install CTC on 209 miles of single track and 19 miles of double track between Glens Ferry, Idaho and Huntington, Ore.; equipment order was placed with Union Switch & Signal division of WAB Co.

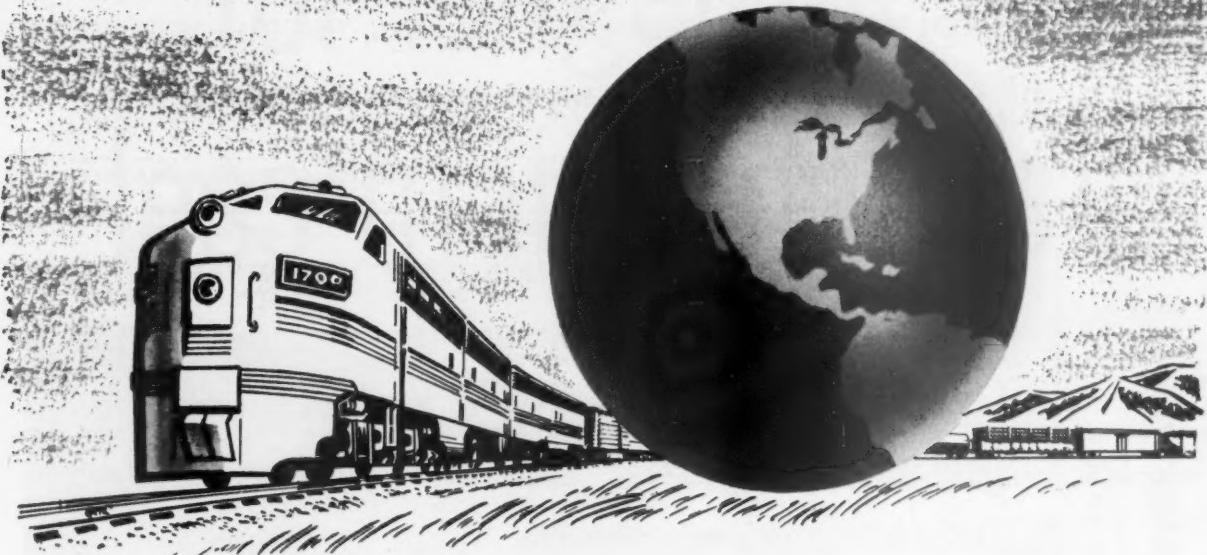
REVENUES AND EXPENSES OF RAILWAYS

Dollar figures are stated in thousands.

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1957

Net Railway operating expenses															
1956															
Name of Road		Average miles operated during period		Revenue (inc. inc.)		Total (inc. inc.)		Total		Total		Trans-		Operating	
Freight	Pass.	Total	1955	Total	1956	Total	1955	Total	1956	Total	1956	Traffic	portion	Total	1955
Akron, Canton & Youngstown	June	171	\$312	\$529	\$451	\$71	\$73	\$66	\$74	\$44	\$154	\$388	\$488	73.3
Atchison, Topeka & Santa Fe	6 mos.	13,172	3,188	8,265	3,052	424	36	439	376	85	269	2,377	2,443	72.8
Atlanta & St. Andrews Bay	6 mos.	13,71	42,079	20,441	205,767	291,625	43,482	418	63,442	63,442	1,467	18,944	40,554	38,471	73.5
Atlanta & West Point	6 mos.	13,71	1,606	1,728	2,022	2,844	311	35	2,483	2,483	13,279	18,933	23,213	19,474	73.5
Western of Alabama	6 mos.	1,332	1,653	1,627	2,041	2,123	317	239	1,51	1,51	117	8,264	1,786	1,786	10,495
Atlantic Coast Line	6 mos.	5,292	10,906	12,914	13,138	15,562	1,054	17,442	18,054	17,442	5,281	45,855	45,855	45,855	10,495
Charleston & West. Carolina	June	93	2,055	34	2,844	3,111	45	45	3,65	61	13	1,44	1,778	98,2	92,2
Baltimore & Ohio	June	343	5,443	5,511	9,709	10,220	2,022	2,844	2,918	2,918	1,06	1,656	1,656	1,656	1,716
Boston & Maine	June	6,006	35,101	39,700	40,200	40,331	2,677	2,649	2,720	2,720	6,712	10,799	10,799	10,799	11,200
Staten Island Rapid Transit	June	29	1,228	281	1,636	1,551	349	314	346	346	11	1,228	1,228	1,228	1,228
Bangor & Aroostook	June	602	9,898	27	990	9,938	9,938	9,938	9,938	9,938	104	1,684	1,684	1,684	1,716
Beasemere & Lake Erie	June	288	3,010	3,010	3,010	3,010	3,010	3,010	3,010	3,010	597	1,106	1,106	1,106	1,106
Boston & Maine	June	1,570	15,164	15,099	16,744	17,320	28,539	20,331	20,331	20,331	1,101	4,059	4,059	4,059	4,059
Central of Georgia	June	1,763	19,625	543	22,168	22,168	22,168	22,168	22,168	22,168	1,106	1,056	1,056	1,056	1,056
Central of New Jersey	June	612	2,492	543	3,010	3,010	3,010	3,010	3,010	3,010	92	9,938	9,938	9,938	9,938
Central Vermont	June	363	832	1,435	1,435	1,435	1,435	1,435	1,435	1,435	544	1,070	1,070	1,070	1,070
Canadian Pacific Lines in Me.	June	234	3,985	279	4,332	4,386	661	113	108	108	91	5,988	5,988	5,988	5,988
Canadian & Northwestern	6 mos.	284	3,909	299	4,332	4,386	661	113	108	108	91	5,988	5,988	5,988	5,988
Central of Georgia	June	1,763	1,822	1,366	3,620	3,761	3,816	3,816	3,816	3,816	1,211	109	109	109	109
Chicago & Eastern Illinois	June	872	2,672	1,263	3,034	3,034	3,034	3,034	3,034	3,034	1,106	1,106	1,106	1,106	1,106
Chicago & Illinois Midland	June	892	16,292	543	16,292	16,292	16,292	16,292	16,292	16,292	1,106	1,056	1,056	1,056	1,056
Central Vermont	June	131	4,048	4,048	4,048	4,048	4,048	4,048	4,048	92	9,938	9,938	9,938	9,938
Chicago & North Western	June	9,287	14,286	1,999	14,976	17,728	20,728	20,728	20,728	20,728	1,106	1,056	1,056	1,056	1,056
Cheapeake & Ohio	June	88,335	107,545	11,056	11,056	11,056	11,056	11,056	11,056	11,056	1,106	1,056	1,056	1,056	1,056
Chicago Great Western	June	5,112	20,250	361	21,617	21,617	21,617	21,617	21,617	21,617	1,106	1,056	1,056	1,056	1,056
Chicago, Burlington & Quincy	June	8,784	15,725	997	12,949	20,521	3,385	3,385	3,385	3,385	1,106	1,056	1,056	1,056	1,056
Chicago, Rock Is., & Quincy	June	8,782	100,450	9,591	12,949	21,995	3,385	3,385	3,385	3,385	1,106	1,056	1,056	1,056	1,056
Chicago, Rock Is., & Quincy	June	1,470	17,973	58	1,301	2,843	2,843	2,843	2,843	2,843	1,106	1,056	1,056	1,056	1,056
Chicago, Rock Is., & Quincy	June	10,615	16,370	1,241	12,919	21,193	2,193	2,193	2,193	2,193	1,106	1,056	1,056	1,056	1,056
Chicago, Rock Is., & Quincy	June	10,612	16,250	1,241	12,919	21,193	2,193	2,193	2,193	2,193	1,106	1,056	1,056	1,056	1,056
Chicago, Rock Is., & Quincy	June	7,594	85,503	8,354	10,215	9,834	13,897	12,801	12,801	12,801	1,106	1,056	1,056	1,056	1,056
Clarendon & Southern	June	711	26,783	1,435	2,549	2,771	3,380	3,380	3,380	3,380	1,106	1,056	1,056	1,056	1,056
Colorado & Southern	June	718	11,943	78	1,138	1,138	1,138	1,138	1,138	1,138	1,106	1,056	1,056	1,056	1,056
Delaware, Lacka., & Western	June	928	5,743	7,131	7,803	7,92	1,106	1,106	1,106	1,106	1,106	933	6,565	6,565	6,565
Delaware, Lacka., & Western	June	93	34,092	4,903	43,433	4,933	4,933	4,933	4,933	4,933	1,106	1,056	1,056	1,056	1,056
Denver & Rio Grande Western	June	2,155	6,324	6,324	6,324	6,324	6,324	6,324	6,324	6,324	1,106	1,056	1,056	1,056	1,056
Detroit & Toledo Shore Line	6 mos.	1,339	1,511	1,511	1,511	1,511	1,511	1,511	1,511	1,511	1,106	1,056	1,056	1,056	1,056
Detroit, Toledo & Ironton	June	604	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,106	1,056	1,056	1,056	1,056
Duluth, Mississ., & Iron Range	6 mos.	566	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,106	1,056	1,056	1,056	1,056
Duluth, Mississ., & Iron Range	6 mos.	566	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,705	1,106	1,056	1,056	1,056	1,056
Duluth, So. Shore & Atlantic	June	544	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,106	1,056	1,056	1,056	1,056
Duluth, So. Shore & Atlantic	June	544	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,638	1,106	1,056	1,056	1,056	1,056
Duluth, Winnipeg & Pacific	June	175	4,291	4	3,012	3,446	3,666	3,666	3,666	3,666	447	29	23	416	1,077

MILE AFTER MILE OF SAFE SHIPPING...



with Streamlite HAIRINSUL

Car building engineers have long recognized that Streamlite HAIRINSUL is the most efficient insulation under all operating conditions. A half century of successful use is proof enough that service conditions never retard its high insulating efficiency.

Not only is Streamlite HAIRINSUL a one-time investment; it actually outlives the life of the car and can be salvaged in perfect condition for use in new cars.

AMERICAN HAIR & FELT COMPANY
Merchandise Mart • Chicago, Illinois

SIX MAJOR REASONS WHY LEADING REFRIGERATOR CAR LINES SPECIFY Streamlite HAIRINSUL

1. LOW CONDUCTIVITY. Thoroughly washed and sterilized, all-hair heat barrier. Rated conductivity—.25 btu per square foot, per hour, per degree F., per inch thick.
2. LIGHT WEIGHT. Advanced processing methods reduce weight of Streamlite Hairinsul by 40%.
3. PERMANENT. Does not disintegrate when wet, resists absorption. Will not shake down, is fire-resistant and odorless.
4. EASY TO INSTALL. Blankets may be applied to car wall in one piece, from sill to plate and from one side door to the other. Self-supporting in wall sections between fasteners.
5. COMPLETE RANGE. Streamlite Hairinsul is available $\frac{1}{2}$ " to 4" thick, up to 127" wide. Stitched on 5" or 10" centers between two layers of reinforced asphalt laminated paper. Other specified coverings are available.
6. HIGH SALVAGE VALUE. The all-hair content does not deteriorate with age; therefore has high salvage value. No other type of insulation offers a comparable saving.



SETS THE STANDARD BY WHICH ALL OTHER REFRIGERATOR CAR INSULATIONS ARE JUDGED

RAILWAY AGE WORKBOOK

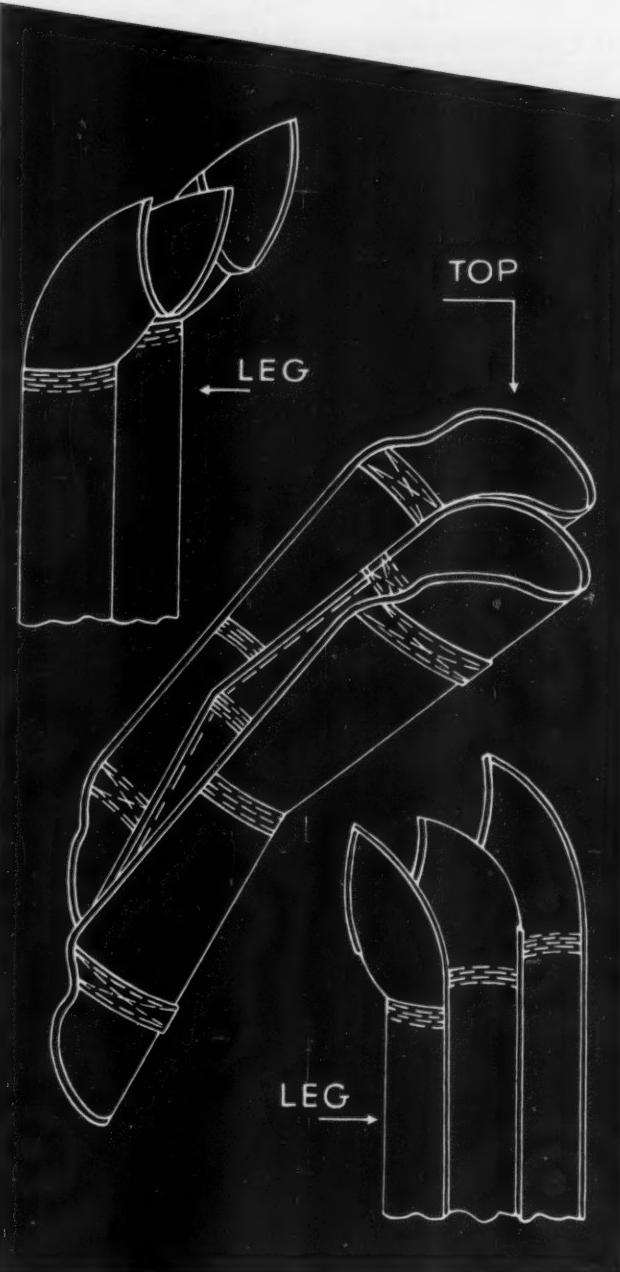
REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1957

Name of Road	Operating Expenses												Net Railway operating income																
	Maint. Way and Structures				Maint. Equipment				Trans. portation				Total 1956				Total 1957				Net from railway operation								
	Total	Dep.	Dep.	Total	Total	Retire-	Total	Traffic	Total	1956	1957	1957	1956	1957	1957	1956	1957	1957	1956	1957	1957	1956	1957	1956					
Eagle, Joliet & Eastern.....	236	... 4,449	4,703	243	25	951	976	41	1,666	3,173	4,77	67,5	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499	1,499				
Elmira, Erie, & Huron.....	236	24,195	29,627	26,557	1,768	1,647	155	5,636	5,216	10,755	18,950	18,768	6,650	9,777	4,880	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575	2,575		
Florida East Coast.....	2,207	12,814	569	14,326	14,958	1,141	1,222	2,286	1,210	6,556	8,457	8,457	6,700	11,799	7,178	7,726	7,726	7,726	7,726	7,726	7,726	7,726	7,726	7,726	7,726	7,726			
Georgia Railroad.....	571	20,20	3,817	86,729	87,383	10,063	1,339	13,874	13,049	3,244	3,244	3,244	1,474	3,975	7,178	15,442	15,442	15,442	15,442	15,442	15,442	15,442	15,442	15,442	15,442	15,442	15,442		
Green Bay & Western.....	571	16,672	3,503	21,857	2,559	2,429	3,377	4,420	1,099	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052	1,052					
Great Northern.....	594	24	701	719	111	124	9	135	148	33	309	400	660	1,851	3,915	3,946	918	918	918	918	918	918	918	918	918	918	918		
Georgia & Florida.....	321	3,637	3,729	12,423	4,243	2,439	2,778	448	931	4	246	2,385	1,97	1,15	2,317	1,427	4,488	853	853	853	853	853	853	853	853	853	853	853	
Grand Trunk Western.....	321	1,636	2,288	10,631	32,190	4,086	3,974	5,733	5,725	559	544	15,165	26,881	26,888	878	837	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750	3,750		
Green Bay & Western.....	830	22,928	1,798	26,637	25,998	5,097	5,991	315	3,760	3,683	709	5,612	4,616	18,348	18,352	70,7	7,689	4,295	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	
Guilford, Mobile & Ohio.....	224	2,200	2,285	6,636	3,488	2,231	3,70	506	24	309	270	55	146	694	1,638	1,796	7,6	7,65	6,627	6,627	6,627	6,627	6,627	6,627	6,627	6,627	6,627	6,627	
Hawaii Central.....	2,757	37,701	1,966	42,424	3,617	4,648	6,174	481	8,737	8,737	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785	1,785			
Hawaii Terminal.....	6,583	121,231	10,985	144,962	146,662	23,338	3,840	3,850	391	4,340	4,016	6,65	6,529	18,367	18,376	70,7	7,689	4,295	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	3,911	
Kansas City Southern.....	6,104	891	20,889	595	23,005	2,505	3,404	3,953	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211	1,211			
Kansas, Oklahoma & Gulf.....	327	376	2,519	3,777	3,777	1,999	733	96	7	28	31	12	33	99	99	287	68,8	71,9	1,118	41	41	41	41	41	41	41	41	41	41
Lake Superior & Ishpeming.....	327	2,512	1,987	2,220	3,697	3,697	3,697	3,697	411	411	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656			
Lehigh & Hudson River.....	96	1,835	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836	1,836			
Lehigh & New England.....	1,758	3,759	3,758	3,758	3,758	3,758	3,758	3,758	192	192	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121	1,121			
Lenni Valley.....	1,147	30,617	1,585	3,934	3,635	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126	4,126			
Litchfield & Madison.....	44	1,802	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832	1,832			
Long Island.....	351	1,106	2,246	32,538	32,538	3,627	4,559	723	92	1,037	990	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037			
Louisiana & Arkansas.....	746	1,756	24,344	32,538	32,538	3,627	4,559	723	92	1,037	990	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037	1,037			
Louisville & Nashville.....	4,726	14,895	9,958	16,872	17,496	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323	1,323			
Maine Central.....	944	1,752	2,512	3,729	3,729	1,214	2,460	4,98	27	393	3,551	919	919	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777	1,777		
Minnesota & St. Louis.....	1,391	11,050	11,050	11,716	11,716	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620	1,620			
Minn., Northfield & Southern.....	1,392	11,059	11,059	11,435	11,435	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729	1,729			
Missouri-Kansas-Texas Lines.....	3,183	30,265	1,211	3,461	3,461	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944	5,944			
Missouri Pacific.....	9,661	19,834	1,172	23,066	25,953	4,887	4,887	329	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107	4,107			
Monon.....	541	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752	1,752			
Monongahela.....	177	3,221	3,221	3,221	3,221	3,221	3,221	3,221	402	402	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656			
Nashville, Chatt. & St. Louis.....	1,043	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992	1,992			
New York Central.....	10,621	1,752	45,764	60,186	66,733	8,623	8,623	9,419	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231			
Pittsburgh & Lake Erie.....	221	2,187	2,091	4,414	4,414	566	566	549	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152	152		
New York, Chicago & St. Louis.....	120	3,369	269	4,255	4,255	2,669	2,669	3,491	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341		
New York, New Haven & Hfd.....	1,762	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392	46,392			
New York Connecting.....	21	283	291	435	435	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455	3,455		
New York, Susque. & Western.....	120	3,369	269	4,255	4,255	2,669	2,669	3,491	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341	341		

for longer life... less maintenance!



Install Adlake Diaphragms!

Top and Legs Are Separate Units! Gives flexibility for longer life—prevents tearing at corners.

Replaceable Sections! Replace damaged sections only—not the whole diaphragm.

Sloping Top Drains Water! Rain, snow, dirt, carry off quickly, moisture doesn't collect.

New Bolting Treatment! Fibers last much longer, and resist car-washing detergents. Aluminum finish for new-type cars.

Cleaner Vestibules! Snow, rain, dirt stay out; new boot completely covers space between diaphragm and toe plate.

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Established 1857
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Manufacturers of Adlake Specialties
and Equipment for the Railroad Industry



REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted.)

MONTH OF JUNE AND SIX MONTHS OF CALENDAR YEAR 1957

Name of Road	Average amount generated during period			Operating Revenue Total (inc. inc.) 1957			Revenue Total (inc. inc.) 1956			Operating Expenses Maint. & Structures Land and Buildings 1957			Operating Expenses Maint. & Equipment 1957			Net Railway operating income 1956			
	Pass.	Freight	Freight	Total	1956	Total	1957	Total	1956	Reserve-ments	Total	1957	Traffic	Total	1957	Total	1956		
Norfolk & Western	3,232	21,265	3,232	22,729	30,523	3,023	2,634	312	2,634	3,986	944	956	2,894	6,117	14,517	13,946	644	3,498	
Norfolk Southern	2,332	12,037	1,694	12,970	18,312	1,741	1,510	1,594	1,510	25,880	26	244	5,306	2,299	3,417	88,301	83,273	60,4	18,326
Northern Pacific	6,004	8,311	5,381	8,877	11,898	5,807	5,161	1,289	5,161	1,135	14	135	1,267	47	6,713	1,134	26,712	26,712	18,312
Northwestern Pacific	6,004	8,311	1,898	8,377	14,752	16,066	1,137	90	1,137	1,787	731	191	1,866	4,350	4,265	70,713	69,713	48	5,322
Pennsylvania	6,229	1,068	3	1,093	2,283	210	261	1,106	2,283	1,066	2,121	1,106	1,135	1,135	1,135	12,745	12,745	12,745	12,745
Penn.-Read. Seashore Lines	6,229	65,463	12	65,953	10,487	63,609	65,823	1,160	65,823	9,650	1,160	1,160	1,077	1,077	4,255	71,486	70,425	68,421	68,421
Pittsburgh & West Virginia	3,828	5,593	5,593	4,603	5,593	2,236	2,236	5,313	2,236	2,085	1,136	1,136	1,136	1,136	1,136	4,255	4,255	4,255	4,255
Piedmont & Northern	3,660	2,368	4,270	5,27	5,27	5,27	27	187	185	185	185	185	185	185	1,135	1,135	1,135	1,135
Pittsburgh & West Virginia	1,322	5,023	5,023	841	818	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155
Reading	1,304	6,975	544	11,184	16,989	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644
Richmond, Fred. & Potomac	6,292	71,011	6,964	9,101	6,964	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101
Rutland	1,118	5,353	3,175	14,256	2,381	216	230	25	1,904	1,904	151	1,904	407	407	407	737	737	645	645
Sacramento Northern	3,345	1,261	1,261	3,711	4,148	2,618	2,618	833	833	833	833	833	833	833	833	3,345	3,345	3,345	3,345
St. Louis-San Francisco	1,945	1	945	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900	9,900
St. Louis-San Fran. & Tex. 6 mos.	4,068	8,839	3,666	9,897	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173	1,173
St. Louis-Southwestern Lines	1,155	2,162	2,162	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316
St. Louis-Southern Lines	1,160	4,890	2,060	5,860	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493	62,493
Savannah & Atlanta	1,144	1,919	1,919	3,277	3,341	56	49	2,35	2,35	2,35	2,35	2,35	2,35	2,35	2,35	2,35	2,35	2,35	2,35
Seaboard Air Line	1,144	1,919	1,919	1,212	1,659	1,148	1,148	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644
Southern Railway	6,281	18,539	1,463	21,499	2,514	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606	1,606
Alabama Great Southern	1,451	701	1,633	1,652	2,60	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532	1,532
Clinch, N. Orleans & Tex. 6 mos.	3,228	1,155	2,162	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316	2,316
Georgia Southern & Florida	4,755	6,664	4,755	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664	6,664
New Orleans & Northeastern	1,162	2,159	2,159	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375	11,375
Spokane International	1,150	1,277	1,277	267	314	55	52	19	19	19	19	19	19	19	19	19	19	19	19
Spokane, Portland & Seattle	1,150	1,288	1,288	1,160	1,249	215	62	3	29	27	19	183	61	61	249	249	249	249	249
Tennessee Central	2,266	2,119	4	439	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579	1,579
Texas & Pacific	1,831	5,326	488	6,997	6,729	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985	6,985
Texas Mexican	1,161	3,114	1,161	3,114	4,148	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235	3,235
Toledo, Peoria & Western	2,392	3,726	3,726	3,788	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985	3,985
Union Pacific	9,766	217,030	13,169	40,739	42,303	5,562	6,370	373	4,689	4,689	1,744	1,744	1,744	1,744	1,744	1,744	1,744	1,744	1,744
Virginia	9,766	217,030	13,169	246,959	243,96	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683	4,683
Western Maryland	6,004	8,314	5,154	8,447	3,076	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177	4,177
Western Pacific	1,192	25,521	1,148	27,275	26,729	4,117	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853	4,853
Wisconsin Central	1,031	27,76	61	2,982	2,889	449	424	44	491	382	93	528	528	528	528	528	528	528	528

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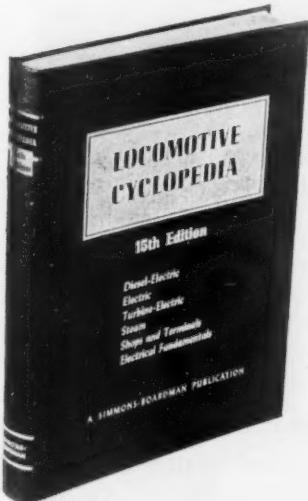
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There is probably no area of the railroad industry where more substantial savings could be realized, in relation to effort expended, than by attention to arresting and preventing corrosion. Rust damage to motive power, rolling stock and structures, it has been estimated, is costing the railroads around \$400 million each year.

Most things the railroads do well—in the realm of their physical properties—are achieved by reliance on people trained in mechanical, civil or electrical engineering. Isn't it likely that similar recourse by the railroads to people trained in the science of anti-corrosion engineering would be comparably profitable?

A prominent railroad officer with recognized engineering ability recently outlined his views on this subject, somewhat as follows:

"The elimination of corrosion damage, by what is known as simple rust, can and must be approached from two principal viewpoints: first, by the selection of metals least susceptible to corrosion damage and, second, when metals must be used that are susceptible to corrosion under normal conditions, by making every effort to protect these metals (in the case of cars) by the use of sealing compounds between sheets at joints, and by paints which will seal the exposed portions of the metals against rust from normal

shopping-to-shopping periods. No niggardliness should enter into the selection of materials or paints to be used—the cheapest protection in the long run is that which will retain its protective value over the longest period of time."

There are two important observations which may be added to this officer's advice, namely: (1) it is necessary, not only to specify materials which are adequately corrosion-resistant, but also to watch the combinations in which they are used, and to consider the designs of equipment and structures, particularly with respect to joints; (2) when it comes to painting, even if quality materials are used, a large part of the value of such materials will be lost if the relatively small additional cost of proper surface preparation is not incurred.

Comprehensive information on this important problem has been presented in two articles in this issue. One, on page 18, explores the subject from the standpoint of (a) costs of corrosion, most of them avoidable; (b) methods of prevention; and (c) factors involved in proper surface protection. The other article (page 25), reports upon the intensive technological research by manufacturers of surface-protecting materials.

The railroads have traditionally sought to hold down the initial cost of such equipment as freight cars. Sometimes this practice results in shortened service life. In today's inflated economy the extension of service life is of vital dollar value, and the extra cost of providing corrosion-resistant materials, proper surface preparation, and adequate surface-protective finishes may be money well spent. A modest bill for preventive medical attention is usually preferable to a long siege of lingering ill-health.

PREVENTION IS THE CURE: It is a calamity for the railroads to keep on incurring their \$400 million annual burden from rust. With new investment money so hard to come by, there's all the more reason to try to preserve facilities already financed. It is usually good business to incur reasonable operating expenses which will minimize heavy outlays of new capital. Chemical and metallurgical engineers are prepared to offer sound prescriptions for corrosion prevention. Manufacturers are ready to fill these prescriptions. Paint, moreover, has a morale value—not physical alone. Painted cleanliness inspires confidence—rustiness doesn't.

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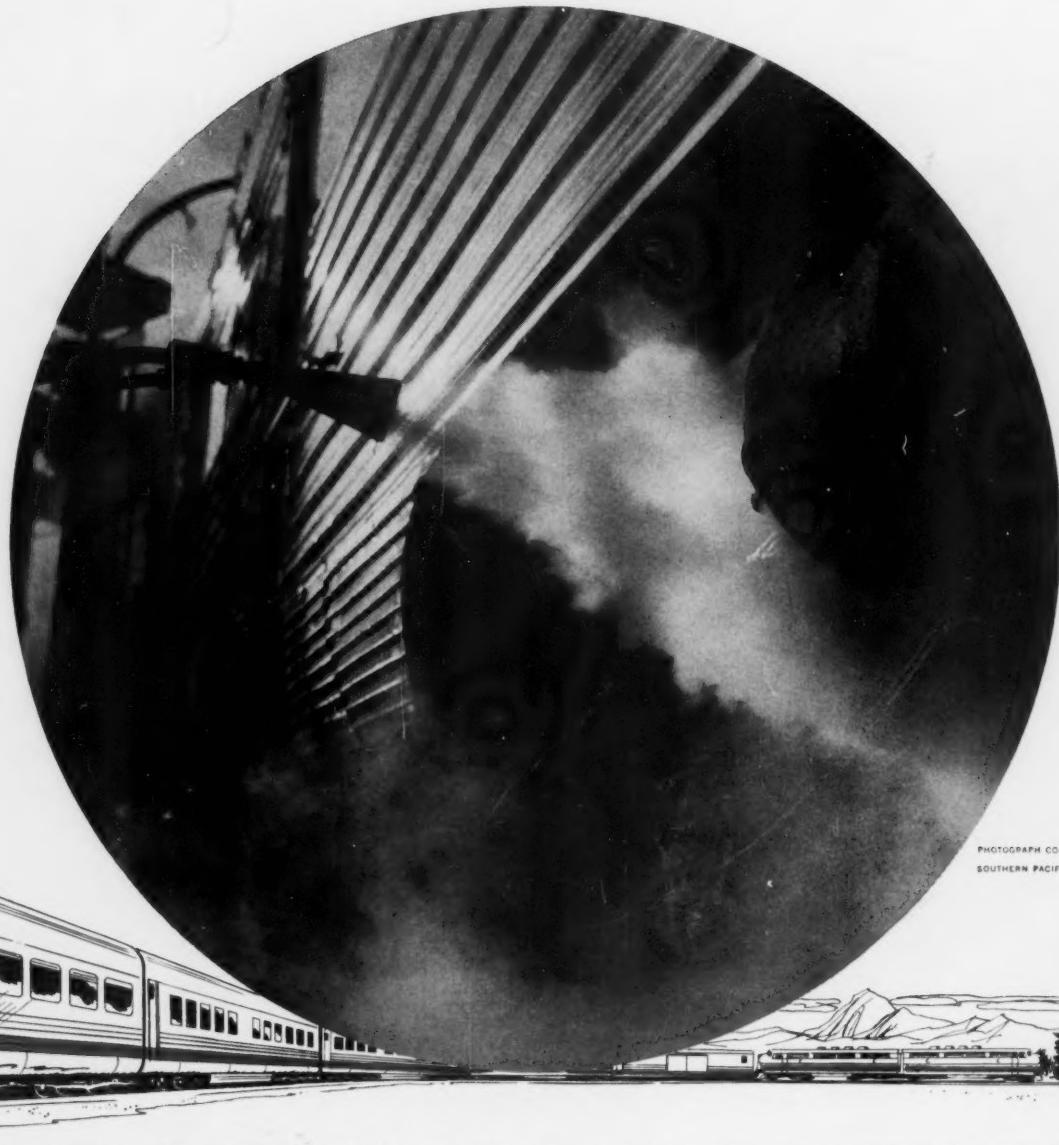
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